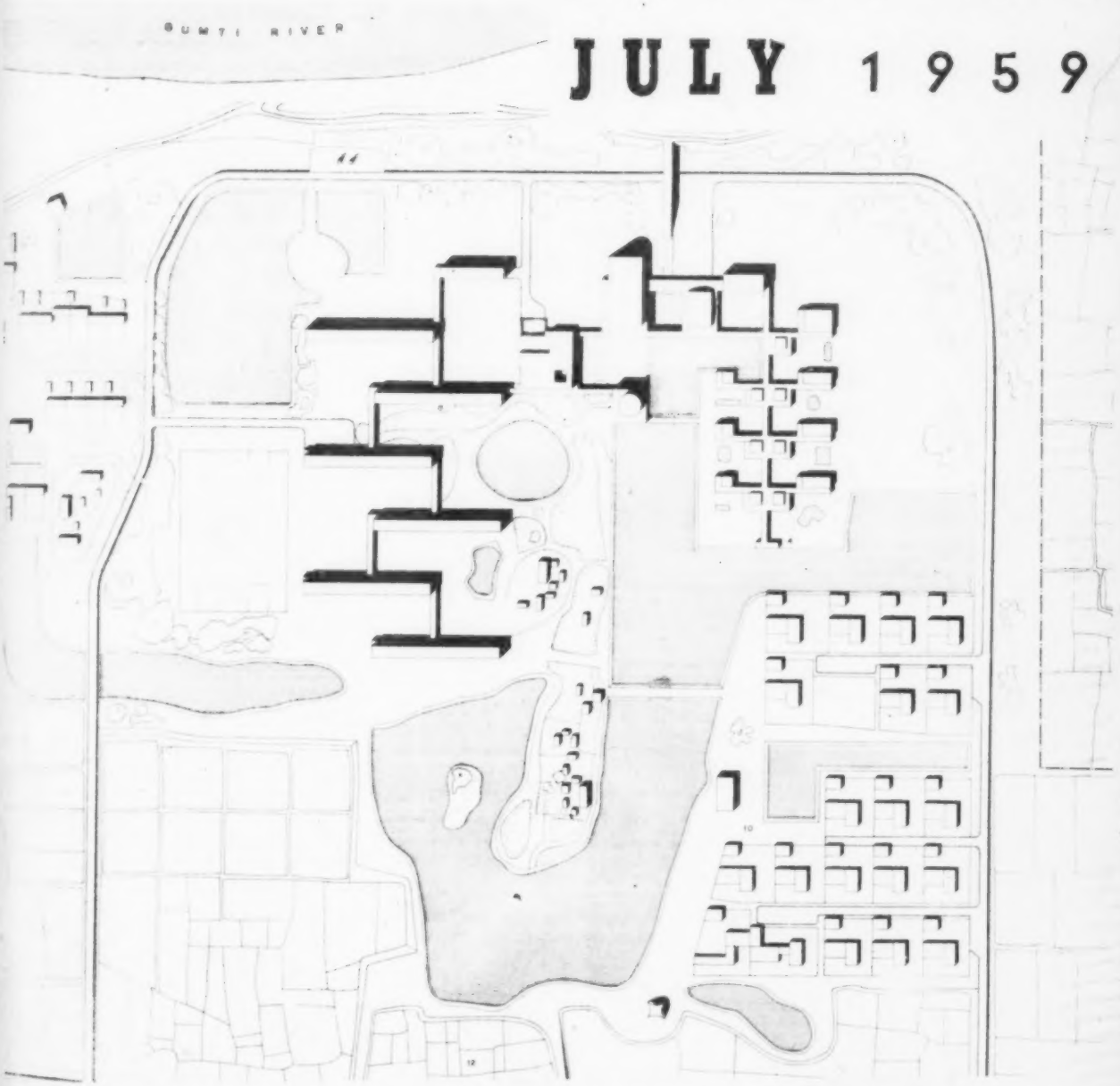
EKISTICS

ABSTRACTS ON THE PROBLEMS AND SCIENCE OF HUMAN SETTLEMENTS

ΟΙΚΙΣΤΙΚΗ

JULY 1959



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E K I S T I C S

ABSTRACTS

of

THE PROBLEMS AND SCIENCE OF HUMAN SETTLEMENTS

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THE PUBLICATION of EKISTICS was started in the Autumn of 1955.

THE IDEA behind it was to supply members of Doxiadis Associates in remote field posts and U.N. Technical Assistance experts working overseas, with a timely selection of abstracts from international journals, papers and books upon the broader aspects of housing and planning.

THE TITLE EKISTICS, comes from the Greek verb OIKΩ, meaning settling down, and demonstrates the existence of a science of human settlements conditioned by man, influenced by economics, sociology, geography and technology.

THE CONTENTS are derived in large part from protected materials and may not be reprinted in whole or in part without the permission of the respective authors.

EKISTICS has become a means of developing interest in this more comprehensive approach to the problems of human settlements. It is addressed to all those interested in the planning and building of better settlements.

CIRCULATION is either:

In exchange for other related publications issued by academic or professional organizations,

or

on a subscription basis: the annual subscription being $25 or its equivalent.

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The understanding of social and cultural factors is essential in a science of human settlement and Dr. Doxiadis in his article this month brings out one aspect when he reminds us that rural dwellers often seek community security rather than more and more "nature."

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Similarly, in the plan for Havana, Cuba, Sert and others recognized the cultural and traditional values of the winding streets of "La Habana Vieja." Thus they took pains to maintain as many as possible of these narrow ways as pedestrian ways, while widening alternate streets for modern traffic flow. Even more remarkable perhaps is their scheme for cleaning out the centers of dense residential blocks (with a minimum of frontage land waste) to form patio-like parking lots or small parks. It is very possible that this effective and economic solution will prove applicable in other similar cities. Probably the clearest illustration of the importance of "cultural background" can be found in the housing developments in Hong Kong. The idea of moving refugees from the depths of poverty into very dense housing without substantial training would be unthinkable in most other societies--even for some groups in "affluent societies." Certainly a tradition of cleanliness is an important resource where mass housing must be quickly accomplished.

One difficulty with social factors has always been that they are especially difficult to quantify; and in a world where numbers speak with a strong voice, social policy has often suffered. These difficulties are apparent in the United Nations proposal for a coordinated policy on family levels of living. However, the discussion of human time allocation as a basis for social accounts given by Richard Meier seems the most promising suggestion so far. Perhaps we shall yet see the day when a social calculus will have equal value with economic and engineering data.

Economic planning for a nation like Pakistan is fully supplied with problems, but the availability of a social calculus should simplify rather than complicate many of the difficulties. The availability of technical and administrative personnel, for example, is both an economic and a social problem--one needing a dependable, balanced study and insights from both disciplines and from the wider perspective of ekistics.

Yet there are several indications in this issue to show that there is no inherent opposition between social factors and the technological and economic facets of ekistics. For physical planning, this becomes clear upon understanding the applications and implications of the new Dutch sunlighting rule for building orientation.

Similarly, the further development of modular design is quite promising. For areas of the earth lacking liquid fuel resources, the technical development of the Reader transportable solid fuel steam power generator promises benefits for a whole range of considerations.

The way in which ekistics provides training for development and planning on the very widest scale, will be outlined in the next issue of EKISTICS in which we shall feature the activities of the Athens Technical Institute. So far this is the only institution which has a School of Ekistics, and it trains workers from many of the developing countries. Interestingly enough, it has tailored a special program to meet the needs of Pakistani students.

As a footnote, a correspondent writes "I like the definition of ekistics in the circular letter - i.e. 'inter-relation of man, environment and economics.' It seems to me that we need to get the word into wider use, and perhaps stretch its meaning a little. Or rather, set it as a science in itself, parallel and complimentary to economics. The basic thought goes something like this:

> When you look at development from an economic standpoint, you think primarily of material resources such as land, water, minerals, etc., resources which can be measured; and the ultimate measure with which you deal is the monetary measure.
>
> If you approach development from the ekistics angle, you start with people, and you think of ways and means of promoting the standard of skill of their hands and brains, and the material standard of the surroundings in which they live. The results are not assessable in terms of money.
>
> The science of economics as regards to the West is not enough so far as the under-developed countries are concerned. Its techniques omit many factors which have to be taken into account. Therefore, the science of ekistics which takes these factors into account, is an essential instrument of study. It is not just a restatement, or a variant of town planning or social science. It is a science in its own right, which might be said to be the missing link between economics on the one hand, and town planning and social science on the other."

EKISTICS is compiled by Yvette and Lawrence Mann under the direction of Prof. J. Tyrwhitt.

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NOTE: The figures below each title refer to the Universal Decimal Classification.

ARCHITECTURE, PLANNING AND EKISTICS

C.A. Doxiadis

Abstract from a lecture series given at the Massachusetts Institute of Technology, Spring, 1957.

1. I have discussed the organization of a hierarchy of communities. I would like now to show how one can develop these ideas about planning on a regional scale: on a scale in which city and villages are elements of wider systems. The concept of deliberately planning on a regional scale was a natural result of developing industrialization, mechanization and transportation. The expansion these brought about, both in spreading urbanization and in increased communications, meant that larger and larger areas came within the orbit of interest of a central city (or group of cities). The success of any plans for the central city depended upon how far it was or was not related with other developments within the metropolitan region.

2. This approach then spread further until regional planning came to embrace areas well outside immediate metropolitan influence, and, in many cases, regional planning has grown to become national planning. This may grow further but for most purposes, the nation is the biggest unit for which physical plans are being made.

3. When we viewed planning from this angle, the first problem was not so much the quantities of houses needed as the determination of functional geographic regions. Here we cannot always be guided by the present state of development. For instance in Syria areas such as the Gezira had for centuries been considered desert. However, since the Second World War as a result of irrigation, consequent changes in land use, and the nomadic habits of the people, population is swarming into this area and it is now an agricultural export district.

4. In many under-developed countries (and I will concentrate on the Middle East as I know this area best) half or more of the population still live outside urban areas. This proportion is continually decreasing, which is one of the most pressing reasons for creating far sighted regional planning.

5. Possibly the earliest instance of regional planning was in Greece in the 5th century B.C. At that time the city of Athens had a population of 200,000 and the port city of Pireaus had about 30,000. It was decided to connect these cities by two long roads. This was primarily to facilitate the protection of the areas between, than form hostile elements.

6. Administrative patterns are very poor guides to rational regional divisions. They are usually the result of historical happenstance. For other reasons, geographical features often serve better as linking than as dividing elements: watersheds, river valleys, etc.

Doxiadis, C.A. Architecture, planning and ekistics --2

7. We turned to another approach. We had talks with the people themselves. We found they felt themselves to be linked with certain communities because of a series of connecting links, which were not necessarily related to the administrative hierarchy.

8. Of course both historical events and geographic features played a part in developing their feelings of connectedness as well as the existence, or non-existence, of routes of communication. But when we worked from these we did not get as true a result as when we mapped the actual places to which the people went: the location of clusters of shops and services, which did not always fall in the same place as the clusters of population. We began to see a pattern forming which really brought out the points of interest. Places which, in spite of the fact that the actual resident population was smaller, really acted as focal points for the people of the area.

9. These studies enabled us to discover the economic inter-relationships of different settlements and, from this, the economic grouping over larger regions. In Greece, we found there were eleven major economic regions with their subdivisions. When we compared this map with all other survey phenomena, we found that great improvements in the life of the people could be made by certain quite minor alterations, such as transportation routes. This convinced us of the value of this approach.

10. We have checked this method in Iraq and arrived at the same conclusions. Other systems, such as mapping the types of settlement, based on population densities, building materials or geographic location, led us nowhere.

11. In 1933 W. Christaller* developed a hexagonal theory of settlement based on the effect of a natural hierarchy of communicating centers undisturbed by any outside element. Of course any major feature: whether a river, a railway line (or expressway) or a minefield, induces that pattern to change. But, he believed the degree of this change could, to a large extent, be predicted.

12. This was a theoretic exercise but I have found (to my astonishment) that the basic pattern exists in practically every area I have studied, and that where it does not, the reasons are fairly obvious. One interesting case exists in Iraq. Baghdad, Basra, Amara, Kut and Hilla form five centers of a hexagonal grid: the missing center was created in 1870 as a new town by a Turkish general. This was two generations before Christaller. It was the only place where a large new town was successfully founded and it is put on the site where Christaller's theoretic hexagonal grid required another center to be established.

*Walter Christaller. Die Zentralen Orter in Suddentschland: 1933.

Doxiadis, C.A. Architecture, planning and ekistics --3

13. At another level, we used the same system to form the basis for a rural plan in a newly irrigated area. We had to plan for 25 to 50,000 people who would live only from agriculture. We assumed they would not have tractors and, then went around talking to agricultural families to find out how far they considered it reasonable to walk to the fields. We found no-one considered a walk of 45 minutes unreasonable. This gave us a measure of establishing the limit of size of the basic community. As a result of further studies we were able to set the size at a figure of 270 families because this was the largest community which could economically service the land without obliging anyone to walk for more than 45 minutes to his fields.

14. When we imposed this pattern on the irrigated region we found the theoretic hexagonal grid required several adjustments - particularly in view of the lines of the river. It was natural for the people to wish to live as close as possible to the river banks, thus inducing the theoretic pattern to change by a predictable factor.

15. It is possible to think of many examples of how every time man touches the natural landscape he changes the structure of a whole area. Near a small town of 5,000 people, two large developments came about: one day a power station started to be erected at one point and an industrial plant started at another. Before the first year of construction work was over several new families moved into the area. If a regional plan had not existed they might easily have disrupted the existing community instead of contributing towards a system within which both can develop.

16. Starting new villages has certain similarities and certain differences from starting new urban areas. One difference is that a village may start with extremely few people - perhaps only half a dozen families - and may grow quite slowly to upward of three hundred families over the years. This requires a different kind of planning, in the way of grouping the primary elements and provision of public services, from an urban area where a rapid growth to its optimum size can generally be anticipated.

17. There is also another difference. Though city people long for green parks and open spaces, we have found it quite otherwise in the countryside. The urban dweller thinks that the peasant farmer loves the country, that he finds it romantic and wants to have it incorporated in his village. The truth is just the opposite. The peasant farmer hates the countryside and nature, because it is there that he has to labor for days and days and years and years, only in the end to see beautiful nature destroying his whole crop. Whenever we worked with country people we found they wanted to isolate themselves from nature. It is for this reason that we grouped the dwellings around central squares, trying to give the country people a life protected from the elements of nature. This is quite different from the aim of most urban developments in the west.

Doxiadis, C.A. Architecture, planning and ekistics --4

18. We can move from the village to considerations of the rural house. The rural house must be far larger than its urban counterpart because it has to allow for stables, store-rooms and so on. There is an antithesis between the low income groups and the need for many rooms. But in traveling around the world we see many examples of low income farming with large houses, far too large in relation to their economic standing. What is the explanation? It is the fourth factor of time! These large farm houses are not built by one generation; they are built over several generations. It takes time - maybe even a hundred years - to create the big farm houses we see in low income agricultural areas.

19. In city life a house has to be finished within a generation: the next generation, the sons and daughters, may move into a different city, a different profession, a different social class. The urban house has the length of a human lifetime as its economic and social criterion. The rural house lives for generations, sometimes for centuries.

20. We have ranged from the region to the smallest element of it - the isolated farm house. This may seem far too simplified a survey and far removed from the complex problems facing most of us today: the problem of maintaining some balance between urban and suburban life; the problem of keeping urbanization within some reasonable bounds; the problem of providing all built-up areas with adequate facilities and services. Why, in the face of such pressing problems, do I spend time recounting studies in countries where the problems are so much simpler?

21. One answer is that to study a complex organism in any of the natural sciences one first reduces the problem to its simplest terms in order to study its basic functioning. From there one proceeds gradually to higher orders of complexity.

22. I have not had occasion to work in such large metropolitan areas as London or New York, but in studying the metropolitan region of Athens - with a population of 1.5 million - I found I could only understand many of the phenomena there by going back to the origins of our Greek civilization. It was only when I went up into the mountain villages that my eyes were opened and I could see the inner structure of the sprawling metropolitan region of Athens. It had arisen as the mountains, where nature forces the people to flow down into the plain like drops of rain, following exactly the same courses as the streams and rivers, flowing down to the sea where the port and biggest city becomes formed.

23. My second reason for concentrating upon examples from less developed countries is a very different one: it is the hope, which I believe I share with many others, that we are coming to a period when technicians from every country will be able to work for all the people throughout the world.

Town Planning Associates (Paul Lester Wiener, Jose Luis Sert and Paul Schulz)
PLAN FOR HAVANA, CUBA
Original materials supplied by Jose Luis Sert: Text in Spanish. Illustrations.
711.4 (72)

1. Culminating a series of projects which Town Planning Associates undertook in Cuba, the plan for La Havana ranks with other work this team has done in Lima, Peru and Bogota, Colombia. Jose Luis Sert, a member of the team, is also well known as an architect and as Dean of Harvard Graduate School of Design.

2. Studies preliminary to the plan started on an international scale, considering the ties between Havana and cities in several countries. The ties of Havana to other parts of Cuba were also considered: land uses in Cuba as a whole provide the context for the regional study of Havana, as well as considerations of the major urban areas of the country and tourist centers.

3. A flexible plan is indicated for the general structure of the Havana region. Special consideration is given the network of communications within the region. Land uses are outlined and some general principles set down for guidance.

4. A circulation plan relates the suburbs to the central city. The layout of the proposed system of routes is related to the existing pattern of urbanization in the area, as well as to the more detailed land uses. Proposals for land uses within the metropolitan area are put forward, including a system of parks and sector nuclei. The proposed new street system is related to proposed population densities. Population distribution is proposed by sectors and proposals are made for some redistribution. It is also proposed that the metropolitan area be divided into four zones: a central zone of very high density; the West zone extending from the Almendares River and the southern highway to the urban perimeter on the west; the South zone extending to the south of the central circulatory route and limited on the west and east respectively by the southern highway and the port railway line; and the East zone. The names of the sectors were determined from these zones so that each sector has a letter and a number. This nomenclature will facilitate the work of the Guide Plan of the city, as well as the localization of each sector since the number and name of the street will be accompanied by the sector name.

The Central Area of Havana

5. Since the central area of the city has the highest densities and traffic congestion, careful study was required. Given the situation of Habana Vieja (Old Havana) and the centers of business and commerce of the Vedata, as well as the proximity to the port area and its adjacent service areas, certain sectors of the central area have to be treated in more detail. Furthermore a web of streets and green spaces must tie together the distant parts of Havana's center.

Town Planning Associates. Plan for Havana--2

Civic Nuclei

6. As a national capital and a tourist center, Havana needs to study carefully the future development of the zones of government buildings, of the university, of banking and of hotels in the central part of the city. There are five principal nuclei which have to be studied in an interrelated manner: the Plaza de la Republica and the Castillo of the Principe; the university city and the ancient Botanico; the zone of the Malecon; the new banking zone within Old Havana; and the buildings of the new ministries and the Presidential Palace at the exit from the tunnel in East Havana. The importance of such nuclei in great cities is illustrated by examples from Paris.

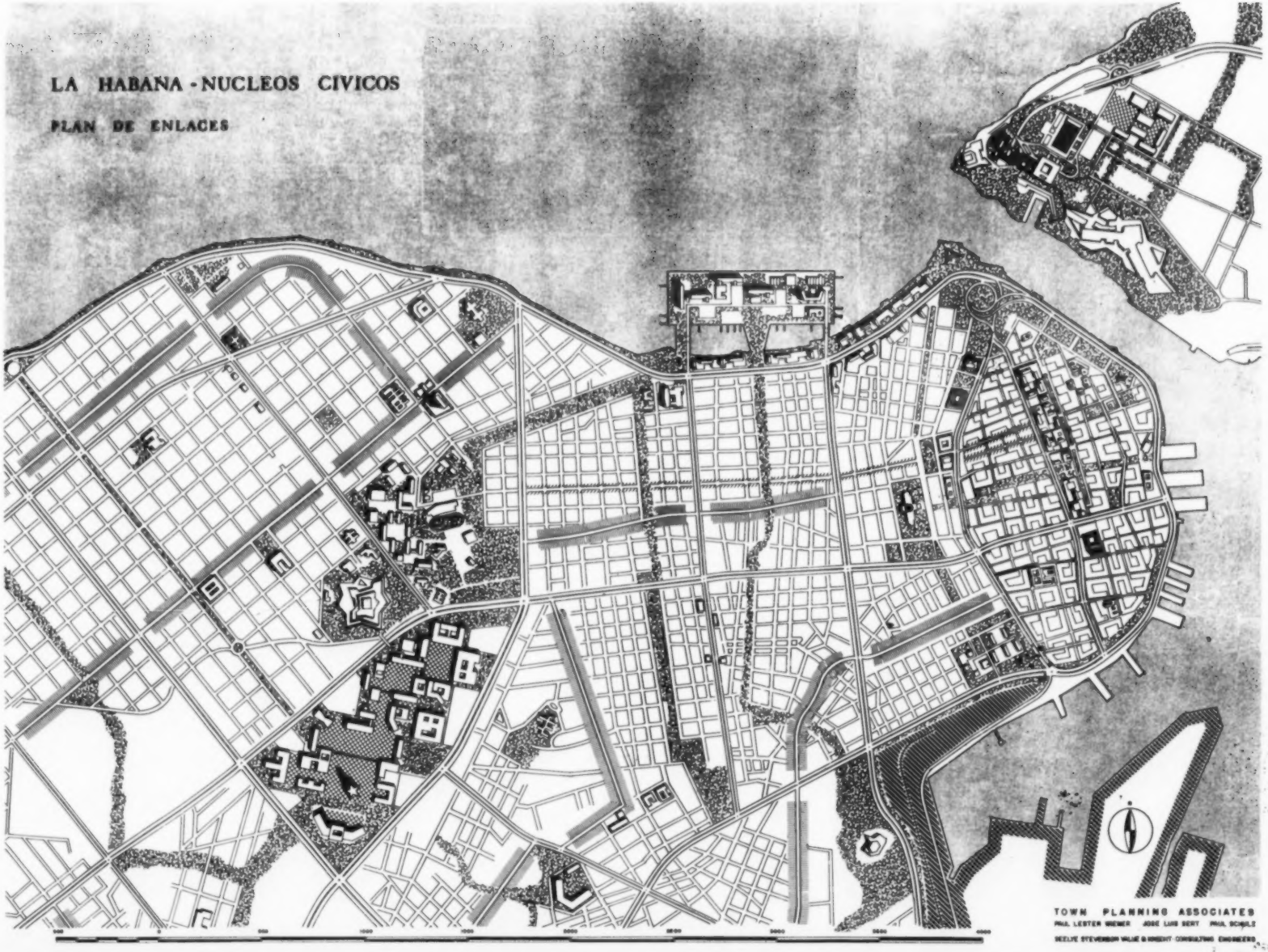
Habana Vieja (Old Havana)

7. Old Havana requires special study. Because of its location and nearness to the sea. It is the part of the city which possesses the chief historic and artistic interest. Changes of city growth have made special and distinct conditions here. The area of Habana Vieja is clearly defined by the banks of the canal at the entrance of the port and the characteristic street pattern within what was once the old wall. As in other Latin American cities, this old street pattern was well adapted to pedestrian circulation but is ill-suited to modern automobile needs.

8. To retain the colonial character an extended section of the area must be preserved, keeping the streets as they are when possible. It is believed that the traffic problem of Habana Vieja can be resolved by a new treatment of the existing blocks. The method is shown in the diagram "Condicionales de La Habana Vieja."

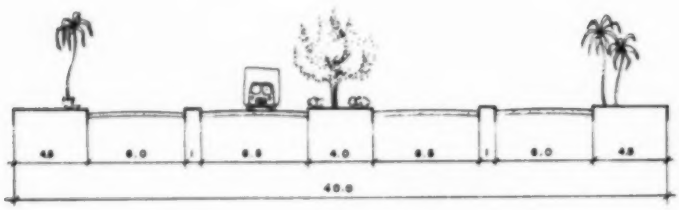
"Condicionales"

9. It is proposed that the centers of blocks be vacated and that alternative streets be widened, thus permitting the use of the centers of blocks for parking and access to the several lots. With this system the narrow width of many existing historic streets is not destroyed and they can be dedicated exclusively as pedestrian ways. Arcades can be built along these pedestrian streets and on new streets, for better protection from sun and rain, while introducing an element which was very frequent in old colonial plans. Parking areas in block centers can in some cases be reused for small parks, especially in residential parts of the area where there are no shops on the street floor. Trees should always be planted in the parking lots, thus shielding the automobiles and asphalt from the view of neighbors on higher floors as well as providing protection against the heat. Possible distribution of patios are indicated so that the dimensions guarantee relation to the height of the buildings, thus avoiding

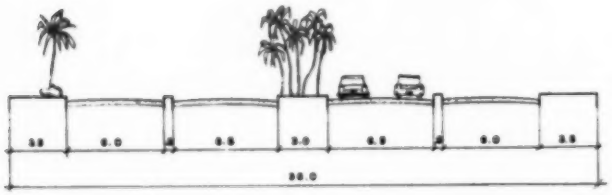

LA HABANA - NUCLEOS CIVICOS
PLAN DE ENLACES
TOWN PLANNING ASSOCIATES
PAUL LESTER WIENER JOSE LUIS SERT PAUL SCHULZ
SKELLY STEVENSON VALUE & KNIGHT CONSULTING ENGINEERS

SISTEMA VIAL CLASIFICADO

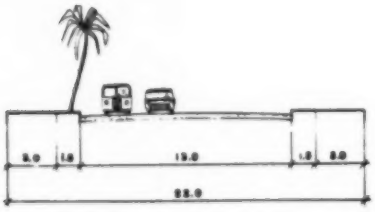
TYPE V1 - SIMILAR TO THE PERIPHERAL ROAD A-A.



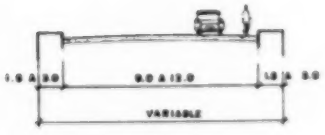
TYPE V2 - SIMILAR TO THE ROADS B B INTERSECTED ONLY BY V3.



TYPE V3- SIMILAR TO THE ROADS CC INTERSECTED ONLY BY V2 AND V4.



TYPES V4 AND V5 - THE AVENUES V4 (SLOW TRAFFIC) HAVE ACCESS TO THE V3 AND V5 (THESE FEED THE INTERIOR AREAS OF THE SECTOR).



TYPE V6 - STREETS OF INTERIOR DISTRIBUTION WITH ACCESS TO SERVICE WAYS.

Town Planning Associates. Plan for Havana--3

extensive patios which are not useful for ventilation or illumination. The system of rehabilitation of blocks proposed will permit the conservation of almost all existing frontage lots.

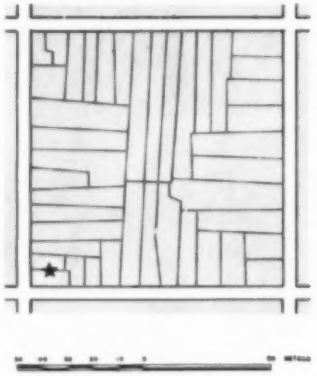
10. Circulation on the basis of several classes of routes is worked out in some detail for Old Havana. Some historic houses are marked for preservation and most of the historic streets are to be conserved as pedestrian ways. Other historic monuments are to be preserved. When a block is to be cleared out for parking, an estimate is made of its area and of its parking needs. The general aspect of the area will be improved with the creation of parking and of parks in the centers of blocks, as well as by the lineal green zone linking the Capitolio with the banking zone. The opening up of the centers of blocks will also improve ventilation in buildings.

Classified Street System

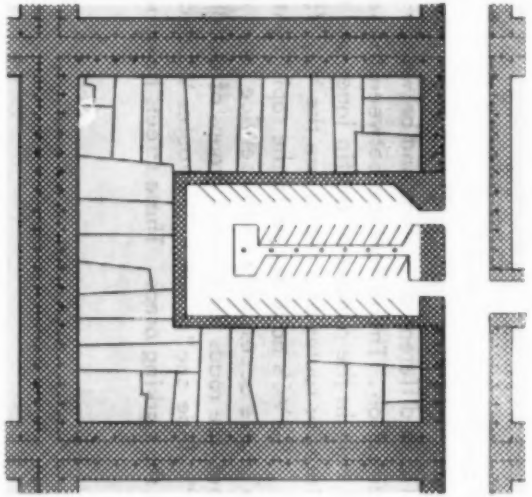
11. The traffic system will explain the new layout of streets of the city. This can be detailed completely enough to allow its application in concrete form to each particular case. The principal streets are the so-called V1, V2, V3, which are the routes which separate lines of rapid traffic and slow traffic. They have separation strips between the routes of rapid traffic in different directions and between the routes of rapid and slow traffic in the same direction. The difference between the sections of the routes V1, V2, and V3 consist only in the number of traffic lanes and the width of the central separators. The interior routes of a sector are the V4, V5, and V6. These are all slow traffic routes. The V4's have access to the rapid central lanes of the principal routes. The V5's have access only to the service lanes of these principal routes. The V6's are service roads for distinct groups of buildings. They take the form of "dead-end" or "cul-de-sac" streets. The routes V5 and V6 (and in some cases V4) give access to the parking areas. These streets have no parking along the streets.

LA HABANA VIEJA - CONDICIONALES

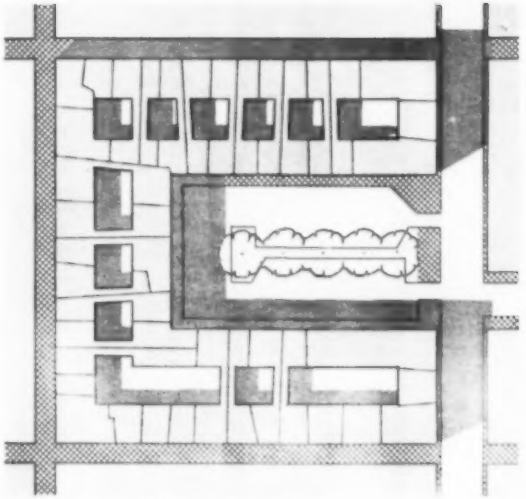
NUEVA DISPOSICION DE QUADRAS - REHABILITACION CONSERVANDO LOTEO EXISTENTE



CONDICIONES EXISTENTES

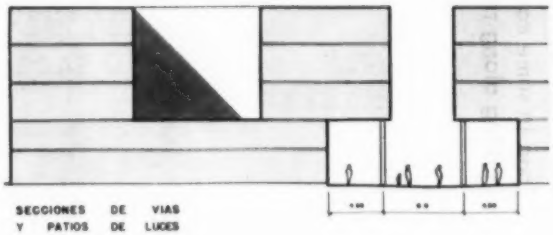


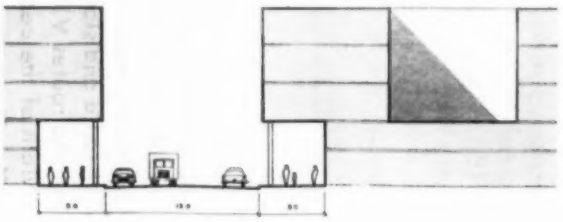
NUEVA DISPOSICION - PLANTA BAJA



PLANTAS PRIMERA - SEGUNDA - TERCERA

SECCIONES





SECCIONES DE VIAS
Y PATIOS DE LUCES

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LA HABANA VIEJA
TOWN PLANNING ASSOCIATES

Rudduck, Grenfell, the Hong Kong Housing Authority and Kenneth H.C. Fung
HOUSING IN MALAYA AND HONG KONG--A CONTRAST
Developed from "Town Planning in Kuala Lumpur," Peta, Vol. 2:2, 1958 (A summary and review of Mr. Rudduck's report by T.A.L. Concannon) and from Hong Kong Housing Authority's Publicity Report for the period 1st January - 31 March, 1959 as well as other sources on Hong Kong, including Mr. Fung's student paper: "A Comparative Study of the Types of Refugee Housing in the City of Hong Kong."
711.58 : 728 (59) (51)

1. The different kinds of housing policy and design which are called for in differing situations may be illustrated by a presentation of examples from Malaya and from Hong Kong. Grenfell Rudduck, an Australian architect and planner, was United Nations Technical Assistance Administration Consultant to Kuala Lumpur, Malaya in 1955. Kenneth H.C. Fung, a resident of Hong Kong, wrote his paper for a course in Urban Planning at Harvard University in January 1959.

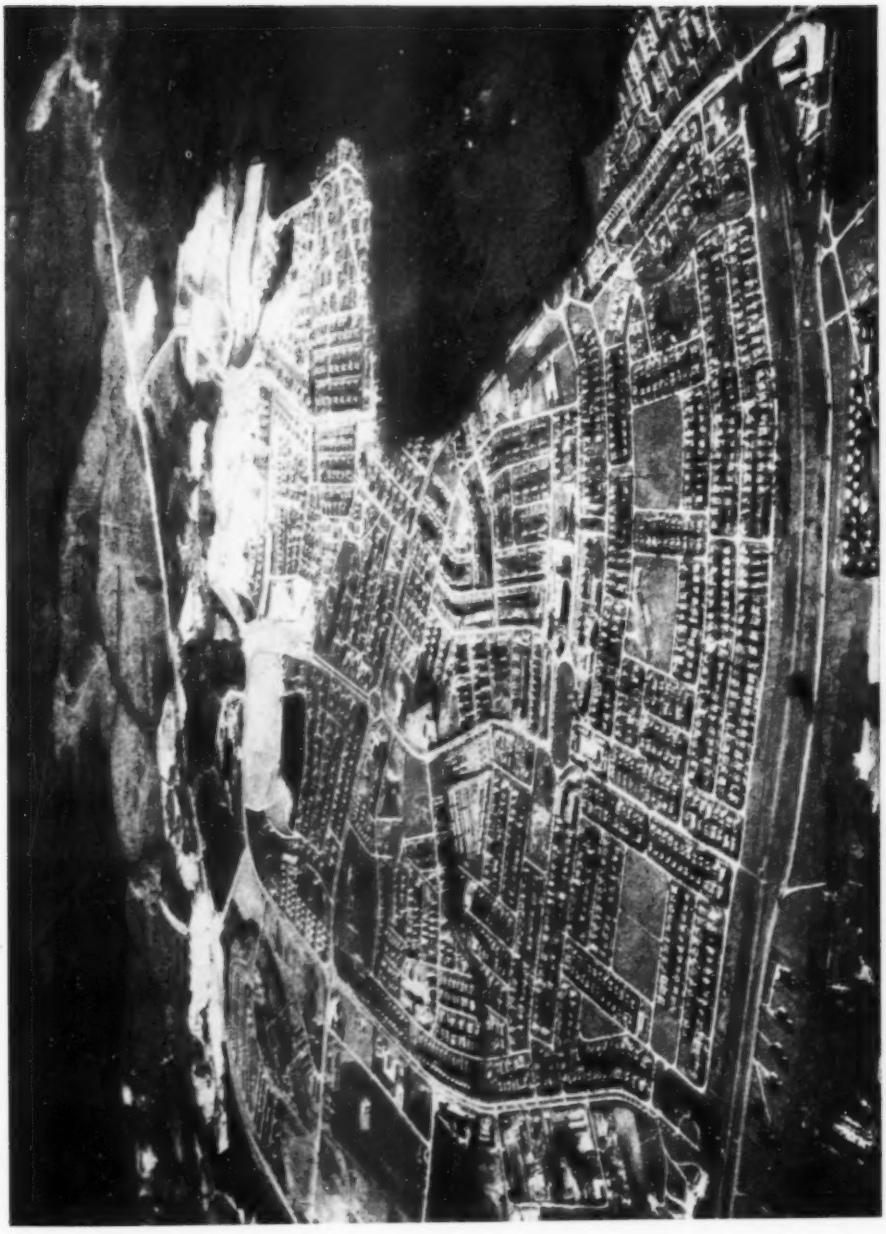
Housing and Decentralization in Kuala Lumpur, Malaya

2. Housing conditions in Kuala Lumpur are probably as bad now as they have ever been--with the possible exception of the World War II period. During the past 25 years the housing problem has been characterized by the over-crowding of existing permanent housing and the erection of "temporary" structures which do not comply with the building regulations. The history of this period, it is felt, offers conclusive proof that it is impossible to improve housing conditions by the application of building controls and other negative measures. Positive measures must be taken to provide suitable accommodation at rents that people can afford to pay.

3. Past figures indicate that the aim should be 4,000 dwelling units a year to reduce the unmet need and to provide for growth. Private enterprise is unlikely to be attracted to the type of investment needed, so the initiative within the Municipality must come from the local authorities. Private capital however can finance the housing of upper and middle income groups, who can afford to pay the rentals expected by private investors.

4. It is proposed that two of the existing, overcrowded "shophouses" in the central area be acquired by the Council or some official body and reconstructed to give improved light and air and cooking and sanitation facilities. These buildings would then be open on exhibition to landowners and the public to demonstrate what could be done to improve conditions. The success of the experiment would justify a scheme for making loans for rehabilitation, repayable over a term of years. It was felt that this would be more practicable and less costly than wholesale demolition. In the central areas of squatter houses, there is room for mixed residential and commercial development, such as flats or terraces combined

Housing in Malaya...



● PETALING JAYA 1958 — Four years ago this was a rubber estate. This new main road from Kuala Lumpur to Klang can be seen in the distance. — K.L. Flying Club picture.

with shops or workshops on the lower floors. A scheme of re-development having a combination of high blocks of flats and terraces over or incorporating workshops, business and garages.

5. In other parts of the town, it was felt, more effective use could be made of roads and services if landlords could be encouraged to replace individual houses by blocks of flats--as has already been attempted. A high flat block on the site now covered by a single house could increase the housing density without detracting from the park-like character of the area.

6. As the population increases, it is felt, new housing areas will need to be developed in the outlying parts of the Municipality or just beyond its borders. One such new satellite town or suburb which has already been completed is Petaling Jaya. Here the general policy followed was government acquisition of land. It is recommended that these policies be continued in two proposed new satellite suburbs one to the north and one to the east of Kuala Lumpur.

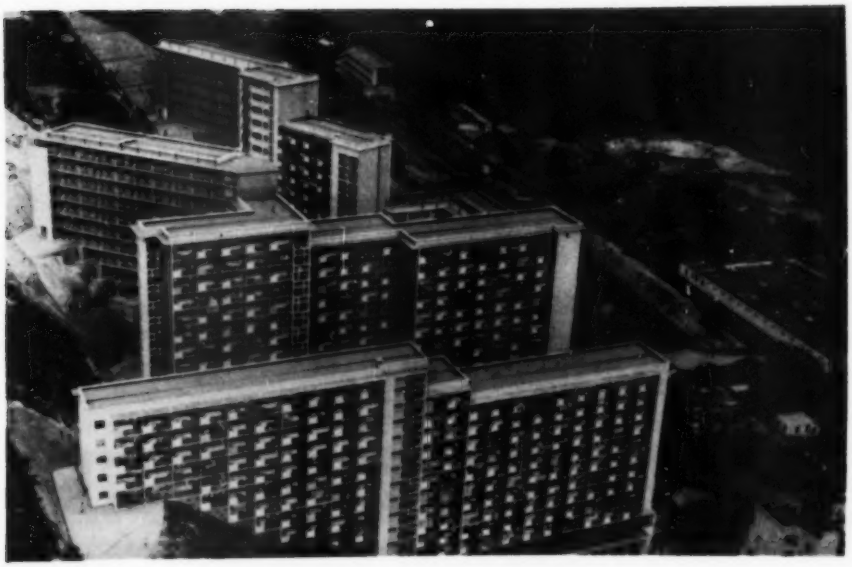
7. The most important reason for decentralizing suburban development is that of overcoming the difficulty in obtaining suitable land for building without having to pay inflated prices. At the present time land values are unreasonably high in many parts of the Municipal area, thus sterilizing development. The only sure way of breaking market values to their true level is to make sufficient land available for sale or to put the land on the market in a developed condition --much as was done at Petaling Jaya.

High-Density Urban Housing in Hong Kong

8. The housing problem of Hong Kong is on a grander scale than that of Kuala Lumpur; and in some ways it may illustrate some of the emerging problems of the Malayan capital. The population of Hong Kong is nearly 3 million persons, of whom more than 80% live in the 36 square miles of the urban area. Well over 300,000 are estimated to be without regular housing of any kind; and nearly 250,000 have been housed in "resettlement" housing. On the basis of 35 square feet per person, the city's present housing stock could accommodate about 1 million people--indicating that a square mile of residential floor area is needed to bring housing up to the accepted legal standard. But "catching up" is not enough, for Hong Kong has a natural increase of some 75,000 persons per year plus a net in-migration of about 25,000. To house the increase alone, the annual requirement would be 10,000 tenement floors; and, at a density of 1,000 persons per acre, 100 additional acres would be needed every year. As early as 1952, non-profit organizations were formed with government aid to build cottages for resettlement. The government also prepared sites with terracing,

Hong Kong Housing Authority.

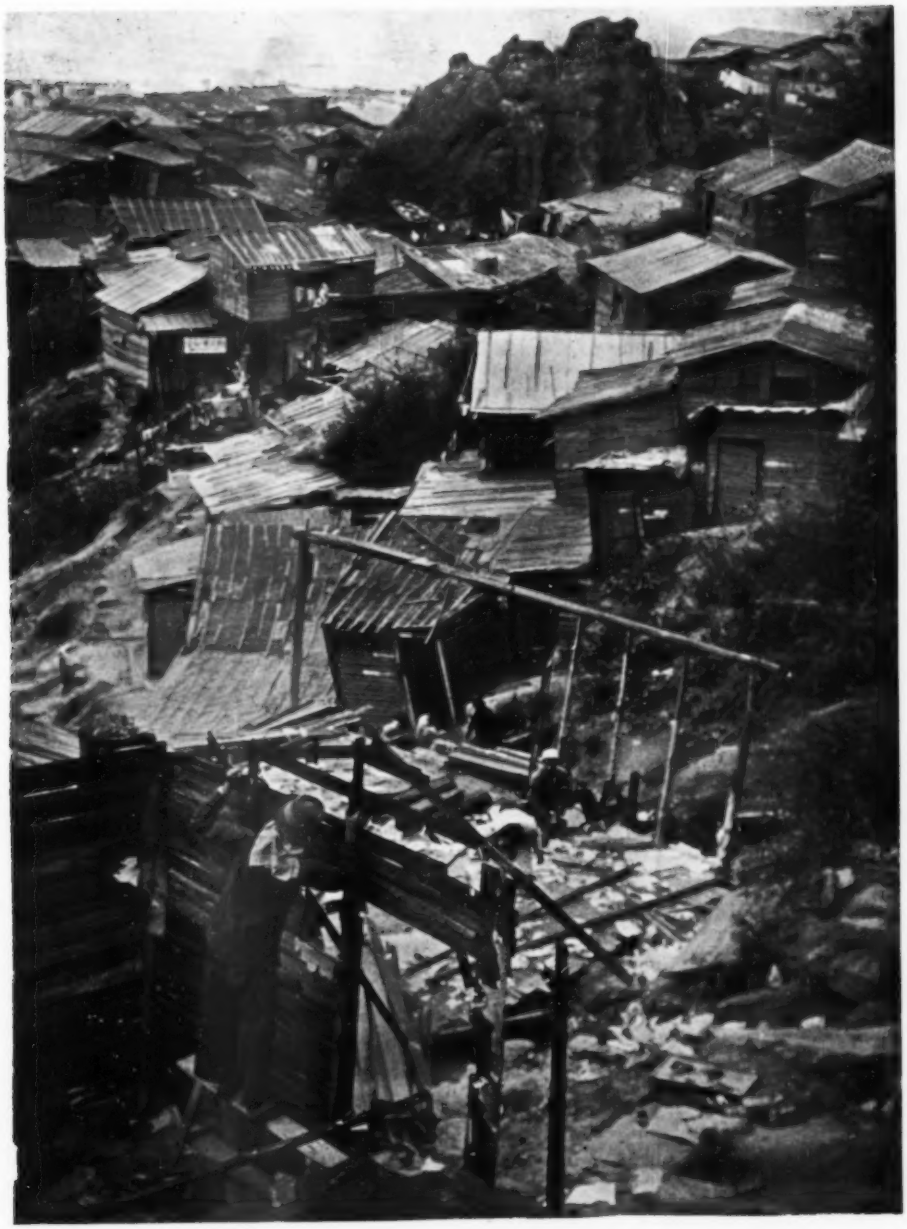
JAVA ROAD - NORTH POINT



arainage, etc. for private construction of cottages of approvea materials. Less than 60,000 people haa been accommoaatea in such awellings by 1956. The cottages are built of a variety of materials, but all are single-storey. Some of the better examples of such cottages were built by the National Catholic Welfare Committee, and these used reinforcea concrete with granite. The average living

Fung, Kenneth H.C. Hong Kong.

A TYPICAL SCENE AT THE SQUATTERS AREA



development. Both the safety and the material well-being of residents is enhanced, but there are certain strains involved in such dense concentrations of people: artificial requirements for the number of persons per room sometimes force strangers upon small families, and sanitation measures are difficult to enforce. Summer air circulation is one more problem.

11. A greater variety of building types is being provided in several new and very large projects of the Hong Kong Housing Authority. The most important project completed so far is that at Java Road, North Point, which will house 12,300 people. There are three main sections or courts. The West Court consist of a U-shaped perimeter block and one tower block; the Center Court is one long block facing a large concourse; the East Court consists of a U-shaped block and three tower blocks. Blocks are 100 feet tall and include 10 floors above the ground floors (used for shops). Open spaces include gardens, walks and childrens' playgrounds. Wide promenades separate the East and West Courts from the harbour frontages. Recent reports show that all but one or two of the 1,955 flats on the estate have been fully occupied since being made available. Although the rent bill amounts to nearly $250,000 per month, the arrears amount is less than $3,000 and only about $750 has had to be written off as bad debts. One severe difficulty of the residents in North Point has been that of getting telephones.

12. Another project is Sai Wan Chuen. It is much smaller, providing only 636 flats and will be completed very soon. The So Uk Estate is a third project. It is a huge project and will contain 4,520 flats for an estimated population of about 32,300 persons. A fourth project is Ma Tau Chung, an irregular site which may call for unconventional designs.

13. The resettlement housing of Hong Kong, especially the newer developments like Java Road, North Point or the So Uk Estate, raise important problems. Are these small dwelling units below the minimum for human habitation? No reports out of Hong Kong have yet indicated this to be the case. However, they certainly do approach the minimum; and they raise the question of what is need in housing much more concretely than is usual. It might be suggested that a certain strongly felt housing emergency (not just by planners and housers) must be present before Hong Kong - type housing is possible. And, while such a felt emergency may very well come to Malaya--and perhaps to the whole world, the time is not yet upon us. For most countries, such mass housing design is too "extreme" if not too "advanced."

Editors Note: For some background on housing in Malaya see Ekistics April 1958 and May 1959. For more extensive comment on the Hong Kong situation see Ekistics, March 1958 and May 1958.

Fung, Kenneth H.C. Hong Kong.

Better example of cottages built by Nat. Catholic Welfare Committee.

Cottages built on terraced slope with drainage and proper paths.

Meier, Richard L.
HUMAN TIME ALLOCATION: A BASIS FOR SOCIAL ACCOUNTS
Journal of the American Institute of Planners, 25:1 Feb. 1959, pp. 27-33.
301: 658.54 (100)

1. Here a researcher into a broad range of human problems seeks to develop indices of the richness of life in urban communities. A technique parallel to that of national income accounting can be used for analysis of the social choices made within a population--based on the ways people spend their time. If improvements in income and social development are accompanied by increases in the amount of time spent in public activity and are reflected in an increase in the variety of life, then the cumulative data on time allocations can be used to indicate whether the life of various sections of the population is getting richer--and the effectiveness of programs directed to modifying the social and physical environment can be tested. Richard L. Meier is presently engaged in research with the Mental Health Research Institute of the University of Michigan. During the coming year he will be teaching at Harvard University and will begin research in the Harvard-M.I.T. Combined Center for Urban Studies.

Introduction

2. Planners have been in almost continuous revolt against the strictures of economists, and have attempted, through trial and error aided by investigation, to aim for something more than the accumulation of wealth. They have conceived of a richer, fuller life for both the individual and the community at large. But the absence of quantifications has left "amenities" and "social integration" lumped as imponderables in the view of administrators.

3. Planners need to disentangle, to analyze and to make explicit these imponderables. They need to rework such factors into a quantitative form that can compete successfully with economic accounts for consideration. Alternative sets of accounts should be devised to apply more closely to the requirements of the physical planner. One major area of concern seems now to be coming into the realm of the measurable: The social efficiency of various city structures can be assessed. Two closely associated measures seem to be indicated:

a. The amount of time needed to operate a given city structure can be compared with that required by others. The pattern which allows the most uncommitted time is to be preferred, all other things being equal.

b. An index representing the variety of life, particularly the ways people choose to spend their time, could be compiled. An increase in variety almost always reflects an enhancement in social integration.

Meier, R.L. Human time allocation --2

4. A set of social accounts should reflect process and change in society in a quantitative manner. It should aid in highlighting the implications of alternative programs when a decision is to be made. If such accounts are to be useful, indexes must be generated which reflect human values in a form suitable for statistical aggregation. Values that are commonly held by members of the society may be inferred from numerous economic, social and cultural choices as broken down into convenient categories. The over-all systems improve as the data accumulates.

5. The prime example of what is possible in this direction is provided by the technique of national income accounting. After probing sector by sector and combining their data with current information from other sources, economic analysts are able to identify imbalances and sources of instability. What is still more impressive is the ability to estimate the magnitude of the restoring force that is necessary to regain a steady state and also to suggest the strategic points for injecting resources so as to achieve this effect. The recommendations cannot always be successful because they presume the absence of unusual and disturbing intervening events.

6. Economic data that are presently available are least effective for guiding the programming of education, public health, public welfare, crime and delinquency, etc. The advantages claimed for one project over another in these sectors must now be based upon qualitative judgments, and they are therefore difficult for the experts to justify on logical or objective grounds. An existing over-all system of accounts such as market values tends to outweigh less systematic discussion in decision making.

7. The inadequacy of economic accounts in the areas of urban activity most distantly removed from market transactions suggests that some other set of accounts be elaborated to assist policy-making and planning--a system so constructed that it would accommodate measurements on the social side of the spectrum but still be compatible with the economic accounts. That is, it should meet the requirement commonly referred to as systems compatibility. An additional requirement of such a system is that it should not cost very much to develop and maintain the requisite statistical series. Herbert Simon, in his book Models for Man--Social and Rational and in earlier works, has suggested that in an organization (for lack of any definite criterion for calculation) the returns from effort tend to be allocated to participants in proportion to their contributions, when this is measurable, or divided equally among members. Simon noted that classical forms of economic analysis cannot be expected to provide good predictions for institutional behavior when considerations of social justice dominate. The problem then was to find a measure of utility (or dis-utility) that reflected cooperative, democratic, and predominantly cultural relationships which could be used to balance the economic biases present in contemporary accounts. The following proposal is based on Simon's theoretical insight.

Meier, R.L. Human time allocation --3

The Time Budget

8. People elect to spend their time accoraing to more or less regular relationships. Each person normally has only a few practical alternatives open to him at any given moment. Once the pattern of time expenditure is understood, it is quite feasible to predict with some confidence how many people are located in a given territory at any given hour. Also a partical explanation can be made of their purposes for being there.

9. The time budget describes when, where and what, as well as how much. Ability to forecast depends heavily upon the cyclical tendencies in the allocation of human time. The main cycles are daily, weekly, monthly, and yearly. Two of these, the first and the last, are imposed by the natural environment and are not subject to change. The other two are subscribed to internationally as convenient cultural arrangements. The holiday pattern, normally an annual cycle, will of course differ from one locale to another. Cycles also appear in the form of oscillations between home and work and in the quantity of time allocated to various tasks.

10. Governments already collect most of the basic data. Labor-force statistics can give the amount of employment in hours at various kinds of works, broken down by places of employment. School-attendance statistics can be analyzed according to enrollment by grade and location. Traffic-flow data, from which can be determined the amount of time spent in various forms of vehicles, are available in various degrees of completeness. Health data allow an estimate of time lost from other activities owing to illness. Private organizations, such as circulation-audit bureaus, collect data on newspaper and magazine reading and the time spent upon radio and television. Other agencies assemble information concerning attendance at the cinema, spectator sports, restaurants and night clubs, etc.

11. But there will be some gaps in the reporting of time expenditure. In semi-private activities such as housekeeping, or social conversation with friends there will be a major deficiency. Fully private activities of the society's members generate planning problems only when they consistan tly erupt into public affairs. Educational planners and mental health specialists would find comprehensive views of family life extremely rewarding in the advancement of their work, but ethics prevent the selection of random samples for observation. Data gaps on relatively public uses of time can be bridged by means of recently developed social survey techniques using random samples. There are now ways to check survey reliability.

12. The time budget may be considered to be a simple extension of the Census. Instead of taking note every decade of the geographical location, social position, and formal roles of inaividual members of the society, a continuous accounting may be made. It is much too expensive to describe what all people do with the time available to them, but by making compromises which make fewest changes the value of the data for appraising matters of policy, an economical representation may be worked out.

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13. It may be objected that one person's time is worth more than another's, e.g., a doctor-nurse-patient comparison, and that it is thus difficult for the time of such different kinds of persons to be aggregated into a unified set of meaningful social accounts. But for most social purposes, in voluntary activities and in the political system, participation is based upon equal rights and responsibilities for all. Under the law each citizen is as important as any other. These principles tend to apply as long as there exists no threat to survival (as in war and military situations). Each person's time should be considered equal to every other's.

14. Specialists in welfare economics and moral philosophy will recognize that here, as in economic policy, the intransigent problem of comparing individual utilities will be encountered. A helpful theoretical resolution of the difficulty, applicable to social activities, has recently been provided by Stefan Valavanis* in a system which depends upon the vicarious pleasures and dissatisfactions that people have with respect to the experiences of others--comparing these with selfish satisfactions.

15. Human-hours have allocation properties which are not dissimilar from those applied to land. Time, like land, can only be consumed or wasted. There are only trivial exceptions to this rule. Yet we have the intuitive general impression that time can be conserved. Like money income, it can be invested. Schooling and the acquisition of skills are examples of such investment of human-hours. The return on the investment is not more time but an increase in the range of choice in gainful employment and in social activities. Thus we arrive at a significant index for social progress: variety in the pattern of life. The counterpart of the division of labor into an increasing number of specialties is the integration of an increasing variety of social behavior. If it can be shown that more people are choosing to use their time for a wider range of activities, one has as significant an indicator of socio-economic growth as increased per capita income. (It is noted that there may be short-run variations in both percapita incomes and behavioral variety and that there is no necessary connection between the two; but a long run increase in percapita incomes does imply a wiaer choice in time allocation, the inverse also being true.)

16. There are occasions when the normal routines of life are broken, such as when a hurricane is forecast. If it were possible to collect data hour by hour on what people were doing both prior to and during the crisis period, the over-all picture would probably show a marked increase in the integration of human activities. The aftermath of a disaster would bring about an even greater redistribution of people's time, unless the various social institutions that knit together people's activities were themselves overwhelmed. When urban institutions have disintegrated, human time allocation quickly assumes a more primitive pattern. Increased variety serves as an index of integration (social progress) during any sequence of noncrisis states for the society.

* S. Valavanis, "The Resolution of Conflict When Utilities Interact," Conflict Resolution II, pp. 156-169 (1958).

17. Institutions may be said to be more efficient when they fulfill their standard functions with the expenditure of less human time. The surplus may then be reallocated by the individuals or by the institution, if it has individuals under some sort of obligation. This reallocation may be to the most valuable of the other activities that are open, or to new activities invented for expending the surplus. Either course will enhance variety in social behavior.

18. A serious misunderstanding can result from applying the variety index for time use to the behavior of individuals. There are many occasions when individuals do not prefer participation and variety; the model for social man breaks down at least as often as that for rational economic man. The integration really occurs between individuals.

Sector Analysis

19. Three principles should be used in choosing the sectors of a society-wide time budget. The first is to accept the natural divisions into activities that are sanctified by tradition, experience and prior social investigation. This assures that reproducible data are collected and aggregated. The second principle is to choose sector boundaries which maximize the utility and convenience of administrators and planners in their function of exploring the implications of possible policy changes. The relevance of data to contemporary issues is assured by this principle. These two principles are usually consonant, but some conflicts make compromises necessary. The third principle is that of economy in collection and analysis, a rule which pervades the choice of statistical services always.

20. The allocation of time to work and school has already been carefully rationalized so that extensive breakdowns into categories are possible. In other areas of public life we may be dependent primarily on common-sense distinctions obtained from interviews, which must be divided into a set of categories and subcategories. In a study of the Puerto Rican society, work, school, radio and television, shopping, travel, reading, meetings and parties, dining and drinking, play, ritual, personal services, and miscellaneous were used as categories.

21. The most important decisions for defining sectors in the system yet to be made have to do with overlapping time uses. Double-or even triple-counting have been considered but involve great complications in analysis. Some arbitrary decisions have to be made: Time spent in cinemas can be classified in several ways. Similarly, time in jails, hospitals or asylums is difficult to subdivide. Even time on the phone poses problems. A difference is noted in the nature of time use in rural vs urban situations, the former being mostly household-private and difficult to study.

Meier, R.L. Human time allocation --6

Immediate Uses

22. Once put together the social accounts would particularly be used:

a. To make quick assessments of social costs and benefits likely to be associated with a given idea or proposal;

b. To contribute to the understanding of current social changes in a way that allows projections of these trends; and

c. To provide a framework for measuring goal achievement in the respective departments of the government.

23. The extent of use would depend largely upon the manner in which the data were presented. Census tabular form presentation would have only limited application. But presentation in various graphical time series to illustrate quantitative changes in the use of time according to basic time cycles would be more useful. Planners would find the mapping of the various categories of time allocation especially useful. The differences between the bedroom suburb and the financial district or the internal pattern of the industrial suburb would be quickly visible. With the data on punched cards, the well-staffed agencies would be in a position to read the information in various ways.

24. Time allocation patterns, mapped by neighborhood, and combined with other socio-economic data presently available, should be of great assistance to the site planner, who normally wishes to fit into a context rather than to transform. His task is to optimize the value of a structure or set of structures at a given location over the long run. For smaller projects he will adapt to the observed patterns of activity in the locale, but for larger projects a social survey may be attempted. A time-series plot that exhibits various trends in human time use would enable the site planner to project social survey data into the future; and it would permit him to adapt his space allocations to the time allocations that would mostlikely be preferred when the structure was completed--perhaps three years after the social survey is made. Thus the site planner could routinely adapt to the changing environment; and where social change is rapid an advance could avoid many embarrassing mistakes in large scale construction.

25. Much rethinking is needed in urban low-cost housing. Designers seldom understand what life in the lower classes is like or can be in the future. When the life style is spelled out in terms of time allocation, the designer can simulate on paper the social life that is implied by a given physical design in summer and winter, workdays and weekends, morning and evening. He will thus be able to identify conflicts in circulation and in interests, wasted space in the design, and perhaps even some novel opportunities for integration that might otherwise escape his attention.

26. There will be more immediate use of the accounts by traffic engineers, simply because they are better prepared to manipulate great quantities of information in projecting future traffic patterns. Market research groups in the private sector will also make use of time utilization. The studies of efficiency of individual governmental departments can use an index for measuring the over-all state of health, education or cultural activity. This will reflect a social rather than an economic bias when time allocation is used. Where economic and time systems are compatible, however, it is easy to cross from one to the other.

P.E.P. (Political and Economic Planning)
PLANNING IN PAKISTAN
Vol. XXV, No. 433, 20 April, 1959. pp. 87-109.
33 : 711 (549)

1. This is a careful explanation and evaluation of the problems, the planning process and the prospects for continued democratic planning in Pakistan.

Background

2. All Asia today is plan-minded: among the newly self-governing nations central economic planning is widely regarded as an open sesame which will allow them to pass through the barrier dividing their pitifully low standard of living from the prosperity of their former rulers. It is only human that they should think--however wrongly--that foreign rule held back their progress. Now independent, they feel they must make a big effort to catch up. But this, they are convinced, requires a central plan: otherwise rapid progress can be achieved only at the cost of laying intolerable burdens on the poor. They see planning as the key to harmonising rapid economic progress with social justice. At the same time, they are profoundly impressed with the material successes of the Russian, and more recently, the Chinese plans. They regard these plans not only as models but also as challenges, believing that if their countries are unable to keep pace with Russia and China, democracy will not survive in Asia.

3. While many of the forms of government of the new countries of Asia are democratic facsimilies of the former ruling powers, much of the economic thought throughout Asia today has a markedly collectivist approach. The State is cast in the role of grand supervisor, if not always the universal executive. There are several reasons for this, including the traditional authoritarian nature of Asian communities: in particular the fact that the leaders of Asian countries today were the intellectual rebels of yesterday. Often also there is an unpopularity of businessmen and large property owners in the absence of a sizeable and confident middle class.

4. But the prospect of foreign aid would have pushed economic practice toward central planning, even if Asian economic thought had not been broadly collectivist. In a world divided between two philosophies and centres of power, the underdeveloped countries can hope for material aid from one or both sides. Whatever its motives, foreign aid can only be effectively used (and perhaps will only be offered in specific terms) if the prospective recipient can present a plan for its disposal.

5. Thus independence and the prospect of foreign aid must together have been powerful stimuli to central economic planning in the new countries of Asia. But there was much planning thinking in India and Pakistan even before

the transfer of power in 1947, of which the Bombay Plan formulated by fifteen industrialists is a good example. Pakistan inherited ideas of central economic planning from individual India, and they were quickly applied after partition.

Effects of Partition

6. However justified on other grounds, partition was the very negation of economic planning and an immediate major obstacle to economic progress. The areas which became Pakistan, both the arid West and the humid East, were inherently poor; and partition accentuated their poverty. Well-established patterns of trade and transport were disrupted severely. Some problems of through-running of railway lines, roads and canals across international boundaries have still not been solved. Except for Lahore, all the great cities and trade centers of old India passed to the Indian Republic. Karachi and Dacca had to be expanded rapidly to meet the new national needs. Pakistan has not a single major port. Very little iron ore and coal resources are included in Pakistan; and East Pakistan lacked also the raw materials for cement and concrete.

7. It was even more difficult for Pakistan to create a governmental machine, for most of the benefits from the " steel frame" of British government in India went to the Republic of India. There were relatively few Muslim civil servants prior to 1947, and most of these did not hold high positions. The search for administrators meant a rapid promotion and great dilution in the government service, the effects of which are still being felt.

8. Also checking material welfare in the early days of Pakistan were factors arising from hostility, violence and mass migration in the actual process of partition. Almost the first result of the division of the sub-continent was the arrival of more than 6 million nearly destitute Muslim refugees from India. The stream of refugees from Pakistan to India included traders, professional men and clerical workers. When they left it was difficult to maintain essential services in Pakistan, setting back the prospects of economic development and endangering even the existing low standard of living. Public services were strained. Educational, financial, industrial and transportation activities lost their senior administrators and were badly handicapped. Pakistan's land shortage was further accentuated by the arrival of the refugees, who were mainly farmers.

9. The partition problems of Pakistan were complicated by the hostility between it and India which still continues. The hardships and atrocities of mass migration live long in men's memories. Two other protracted quarrels have been especially important: Kashmir and the irrigation waters from the head-streams of the Indus rivers (now in India). Possibilities of economic cooperation have also been confounded by currency disputes. Even since Pakistan devalued its rupee to equal India's in 1955, much bitterness has remained.

P.E.P. Planning in Pakistan --3

Planning in the Early Years

10. Considering the problems faced in 1947, it is not surprising that the first economic planning efforts of Pakistan were stop-gap measures. Early in 1948 a Development Board was established by the central government to co-ordinate national building schemes and to determine their priorities. In practice the Board could make no comprehensive review of problems and possibilities because of lack of data, and they had no effective control over sanctions or implementation. Most development schemes were approved on an ad hoc basis and performance lagged badly.

11. In 1950 the Government of Pakistan created a Planning Commission, consisting of the permanent heads of central government ministries and the most senior officers of the provisional governments, with the Minister of Economic Affairs as chairman. This was to fit in with the Colombo Plan for the economic development of South and Southeast Asia.

12. Pakistan's six-year plan proposed a total development expenditure of 260 crore Rupees, of which 220 crore would be public investment and 40 crore private. (One crore is 10 million Rupees and is equivalent to nearly £750,000 or $2,100,000). The following was the allocation by sectors: agriculture, 32%; transport and communications, 20%; industry, 19%; power production, 18%; and social development (education, housing, health and water supply) 11%.

13. The six-year plan was a serious attempt at comprehensive programming and none of its individual proposals were obviously misguided But it had been prepared in great haste; and there were many important omissions, including schemes already in progress. It was never an integrated national development programme. A two-year priority plan quickly superceded the six-year plan. This was estimated at 50 crore Rupees and concentrated on certain projects for ports, ships, thermal power stations, cement factories and textile mills. Even this plan could not be implemented as a whole because of international trade difficulties following the end of the Korean War. Once more economic planning had to be put on a " first aid" basis.

14. The government appointed an Economic Appraisal Committee in 1952 to review the progress of development. For the future, the Committee recommended that first priority be given to agricultural, power and industrial development and to schemes for technical training, with second priority to schemes which would attract external aid, and third to " schemes which meet an urgent need or are highly productive on a short-term basis, with due regard to foreign earnings." From this came the Pakistan Planning Board.

P.E.P. Planning in Pakistan --4

The Five-Year Plan

15. Responding to the proposals of the Committee of Appraisal, the government of Pakistan established the Pakistan Planning Board in July, 1953. The job of the Board was to review development, assess resources available for development in the five years following April, 1955, prepare a national plan of development for the same period, make proposals regarding the administrative machinery to assure successful implementation of the plan, and to make other recommendations. Zahid Husain was named chairman of the Board, which also included Mafizuddin Ahmad and Said Hasan.

16. The Board recruited staff from other government departments. At the same time, the Ford Foundation undertook to provide for the service of the Planning Board a team of advisers, organized by Harvard University. This team included both general economists and specialists in each of the main planning fields--agriculture, water resources, industry, transport, housing, education, health and social development.*

17. The objectives of the plan were described by the Board as follows:

a. To raise national income and the standard of living;

b. To improve the balance of payments by increasing imports and by production of substitutes for imports;

c. To increase opportunities for useful employment;

d. To make steady progress in providing social services: housing, education health and social welfare; and

e. To increase rapidly the rate of development, especially in East Pakistan and other comparatively less-developed areas.

Where these aims were in conflict, compromise was necessary. With enough compromise, these various objectives can be read together and make sense enough to provide a directive for national planning.

18. In assessing the practicable scale for the five-year development plan, the Board assumed that national income (some 2,000 crore Rupees in 1955) would increase in total by some 15% during 1955-60, and that about 10% of each year's addition to the national income would be added to private saving. Total private resources for development in the period (assuming high savings) were estimated at 560 crore Rupees. An additional 100 crore Rupees was to be accumulated by

*C.A. Doxiadis was a member of this team.

P.E.P. Planning in Pakistan --5

governmental savings. The total of 660 crore Rupees represented 5% of the national income for the period. This internal saving would be supplemented by private foreign investment and foreign aid, estimated at 40 crore and 380 crore respectively. Thus a total of 1,080 crore Rupees were expected without any serious internal inflation or foreign exchange crises. This target was five times as large as the earlier six-year plan.

19. Of the total, 330 crore was for the private sector. The plan estimated that about one-third of the total private investment would go into large-scale industry, one-quarter into housing and the balance into transport, oil, agriculture and commerce. As a matter of conviction, the board tried to make ample provision for the private sector--avoiding pre-empting resources useful to it.

20. Of public investment, an estimated 935.2 crore Rupees were needed; but an expected " likely shortfall" of 185.2 crore reduced the figure to 750 crore Rupees. The following categories were covered: Agriculture (including rural colonisation, animal husbandry and fisheries), 12.9%; Village AID and rural development outside village AID areas, 3.2%; Water and power development, 28.8%; Industry (incl. fuel and min.), 17.4%; Transport and communications, 17.8%; Housing and settlements, 9.2%; Education and training, 6.2%; Health, 3.1%; and Social Welfare and other, 1.4%.

21. Many of the categories, such as water and power, and village AID (agricultural and industrial development) seek to improve the agricultural situation. Industry is considered second only to agriculture, and is the main means of long-run increase in national output and raising standards of living. Industrial projects encouraged are those which use local raw materials, those which substitute for imports, and small scale activities which promote development in backward areas. The programme is expected to nearly double industrial output during the period, to save about 15% of total imports (probably exaggerated), and to provide employment for some 250,000 (about 10% of population increase) in large scale industry.

22. Transportation projects include major work on rehabilitation of the railways (especially the trackage), some improvement of roads, and (in East Pakistan) major development of inland water transportation. Also, big port improvements are proposed for Karachi, Chittagong and Khulna. Pakistan has been backward in housing, and only 250,000 serviced plots are to be provided on the edges of existing towns. However, there is considerable self-help housing in the AID projects; and private activity is expected for residential construction in cities. In education emphasis was laid on the primary school, but there are serious problems of absenteeism in both students and teachers (the latter being required to work outside because of low salaries). Universal primary educational is set as a 20-year task. The plan makes some provision for secondary education, technical education and the development of the universities.

P.E.P. Planning in Pakistan --6

Performance Against Plans

23. Between 1950 and 1955 the industrial production index (17 industries) rose from 100 to 285. It is impossible to say how much of this was due to the plan. Private industrial investment concentrated in cotton, jute, cigarettes, matches, paints and varnish, pharmaceutical products, electrical engineering, leather goods and footwear, and in fruit and vegetable processing. New industries were created by the Pakistan Industrial Development Corporation, including processing mills and a major natural gas line. This public agency has worked closely with private enterprise and has often transferred ownership of going concerns.

24. Rail, airway, port (Chittagong) and shipyards (Karachi and Khulna) have been the foci of achievements in transport. There was also important improvement of housing in Karachi and Dacca. But agriculture was neglected, and there is a serious food problem with a rapidly growing population. Some good lands were watterlogged, and newly-irrigated lands were not effectively colonised and farmed. Also, industrial expansion meant a drain on foreign exchange reserves for plants and materials. And the increase in industrial investment meant a rise in purchasing power, with no augmentation of consumer goods production--leading to inflation.

25. Expenditures during 1956-57, the first two years of the plan period, show about 25% of the total for public development and nearly a third of the total for private investment. As far as it goes, this might seem a very good start, taking into account the facts that any initial programme is bound to be on a rising curve, that Pakistan has faced poor harvests and foreign exchange shortages, and that the plan was finally published only in December 1957, more than half-way through the plan period.

26. Another way to evaluate the plan is the extent to which the pattern of development since 1955 corresponds to the proposals in the plan; but information on this is presently lacking. A further question deals with whether the planned developments will in fact be achieved during the planning period. Some projects are not too hopeful, such as the Ganges Kobadak project for irrigating, draining and protecting (from flood and tide) some 2 million acres in East Pakistan. Pumping problems have thrown the project off schedule and resulted in much waste.

27. The plan can also be examined for inflationary effect. Some degree of inflation is probably inevitable with large developments in a poor country. But the more the government fails to check expenditure by taxing the wealthier groups, and the more delay there is in getting results from any scheme, the greater will be the inflationary effect of the development plan. Inflation in a country with primitive social services is obviously a very real danger to the well-being of the community. Pakistan has not escaped this danger in recent years.

P.E.P. Planning in Pakistan --7

28. The results of economic planning in Pakistan during the past decade can be summarised as brilliant, uneven and inadequate. They are brilliant in the creation of great new industrial plants in a country without any previous industrial tradition; the cotton and jute mills, sugar mills, paper mills, fertilizer plants, cement factories, chemical works, and many others, are a massive demonstration in the modern world, and a triumph over appalling obstacles--as well as a demonstration of the effective use of foreign aid. Brilliant work was done also in the development of the ports of Karachi, Chittagong and Khulna, to give the new country gateways to the world. There has been spectacular housing development at Karachi, Lahore and Dacca. Electric power systems were built up from the previous exiguous supplies. But other developments suffered; and this was especially true of agricultural production, recognized as the most vital of all Pakistan's needs. Population increased while agricultural output lagged badly. In years of bad harvests a situation of near starvation has required the diversion of foreign exchange for food imports. Inflation has also been stimulated thereby. While the plan was designed to give first place to the development of agriculture, it seems to be just this sector which has received the least help from the plan.

Prospects

29. Probably the actual technique of planning will continue to improve with experience of the staff and year-by-year programming. The outlook for real resources, however, is none to promising. A slowly growing food supply is confronted by a rapidly growing population. With pressures for immediate raising of the standard of living and problems of applying progressive fiscal measures, inflation is a danger. Foreign exchange is not very secure, but considerable foreign aid may probably be counted upon. Inadequate administrative capacity to implement schemes is another serious problem, and can probably best be met through training abroad. The present military government is seen as a move toward efficiency (in land reform for example); but some measures seem harmful. The problem of the standard of living is rooted in high fertility, and the plan has not yet really faced family planning.

E. Reader & Sons, Ltd
TRANSPORTABLE SOLID FUEL STEAM DRIVEN POWER UNIT
Descriptive announcement and letter from their Phoenix Engine Works
Nottingham, England.
621.1 (100)

1. This is a description of a self-contained power unit incorporating a unique steam generator and a robust but relatively compact steam engine. It shows promise for use in some of the developing countries where productive power is badly needed and liquid fuels are scarce or very expensive locally.

2. The power unit is primarily designed for wood burning, but it is also adaptable for other fuels. The firebox has a grate area sufficient to give the full rated output with any fuel having a calorific value in the region of 8,500 B.T.U.'s per pound. Where necessary, arrangements can be made (frequently without additional cost) to modify and enlarge the firebox to burn tropical grasses, straw, etc. Agricultural wastes may also be used as fuel, but appropriate experimentation and modification will be necessary for specific cases. The nature of the fuel used and its relative availability will make operating costs negligible in many areas.

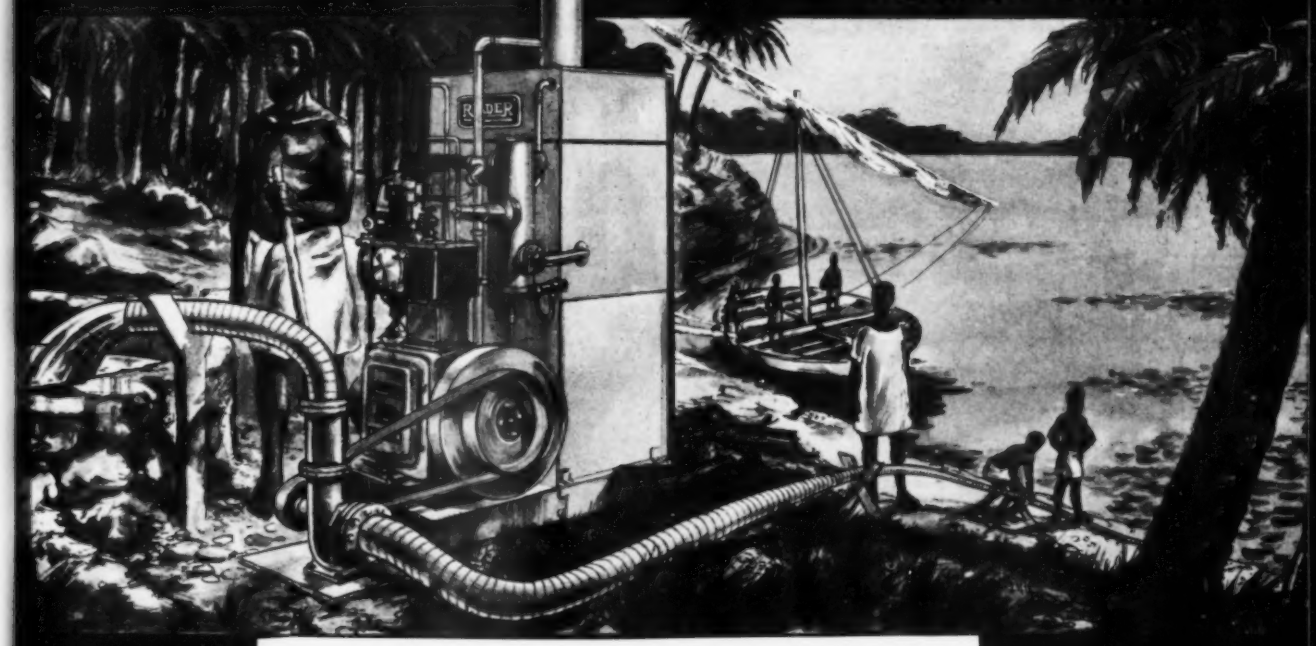
3. The steam generator design includes many special and improved features to permit operation by unskilled labour with complete safety. No headers nor fire drums are incorporated; and, as only a small quantity of water is in circuit, explosion danger is virtually eliminated. Even if the generator is accidentally operated without water, no serious damage will occur. The output of the steam generator is nominally rated at about 300 lbs of steam per hour with feed water at 70°F, a working pressure range of 120/150 lbs per square inch being necessary to permit an output of 5-6 horsepower, with an allowable intermittent overload of 7-8 horsepower. Semi-automatic construction also favors use by unskilled labour. All that is required to put the set into operation is to arrange a suitable supply of water on the suction side of the pump and provide a fire adequate for the power requirements.

4. Basically of controlled flow monotube construction, the arrangement comprises a number of patent heating elements; and the method of assembly permits easy inspection, de-scaling or cleaning. Where the source water is especially hard, is muddy or is unreliable, this feature will be very important. Servicing the steam generator is greatly simplified by the application of interchangeable parts. When replacements are necessary, individual elements can be quickly renewed.

5. The engine speed is 450 R.P.M., and the purpose in selecting this relatively low speed was to ensure a margin of safety in the event that low grade oils were used for lubrication. It is the experience of the company also that fast running engines, unless correctly and adequately serviced, have a somewhat

READER

TRANSPORTABLE STEAM DRIVEN POWER UNIT



SUITABLE FOR SUPPLYING POWER FOR:-

HTING PLANTS AND ADDITIONAL SERVICES IN TROPICAL BUNGALOWS : IRRIGATION AND IER PUMPING DUTIES : TIMBER CUTTING BY CHAIN OR CIRCULAR SAW : SMALL WORKSHOPS : AGRICULTURAL DRIVES : CORN MILLING ETC.

E. Reader & Sons, Ltd. Transportable solid fuel steam driven power unit --2

limited useful life. Lubricating oil consumption of this engine is very low and replenishment is necessary only at long intervals. Also, the ability to easily reverse the direction of rotation of the engine makes it adaptable for any power transmission arrangement.

6. Auto feed pumps are arranged to lift water to the feed tank for delivery to the steam generator. The troubles that frequently occur with an indirect drive are eliminated by the use of positive drive. It is difficult to remove all of the small particles in suspension when working with natural sources, but provision is made by fitting strainers on both suction and delivery sides of the pump. A settling chamber is provided in the feed tank, and this may be drained independently.

7. In the interests of reliability, the control gear is mechanically operated, and no thermostatic or diaphragm controls are incorporated. After initial setting no further adjustment should be necessary; safety covers are incorporated on all essential controls to prevent unauthorized tampering. An automatic firebox damper can also be provided when required.

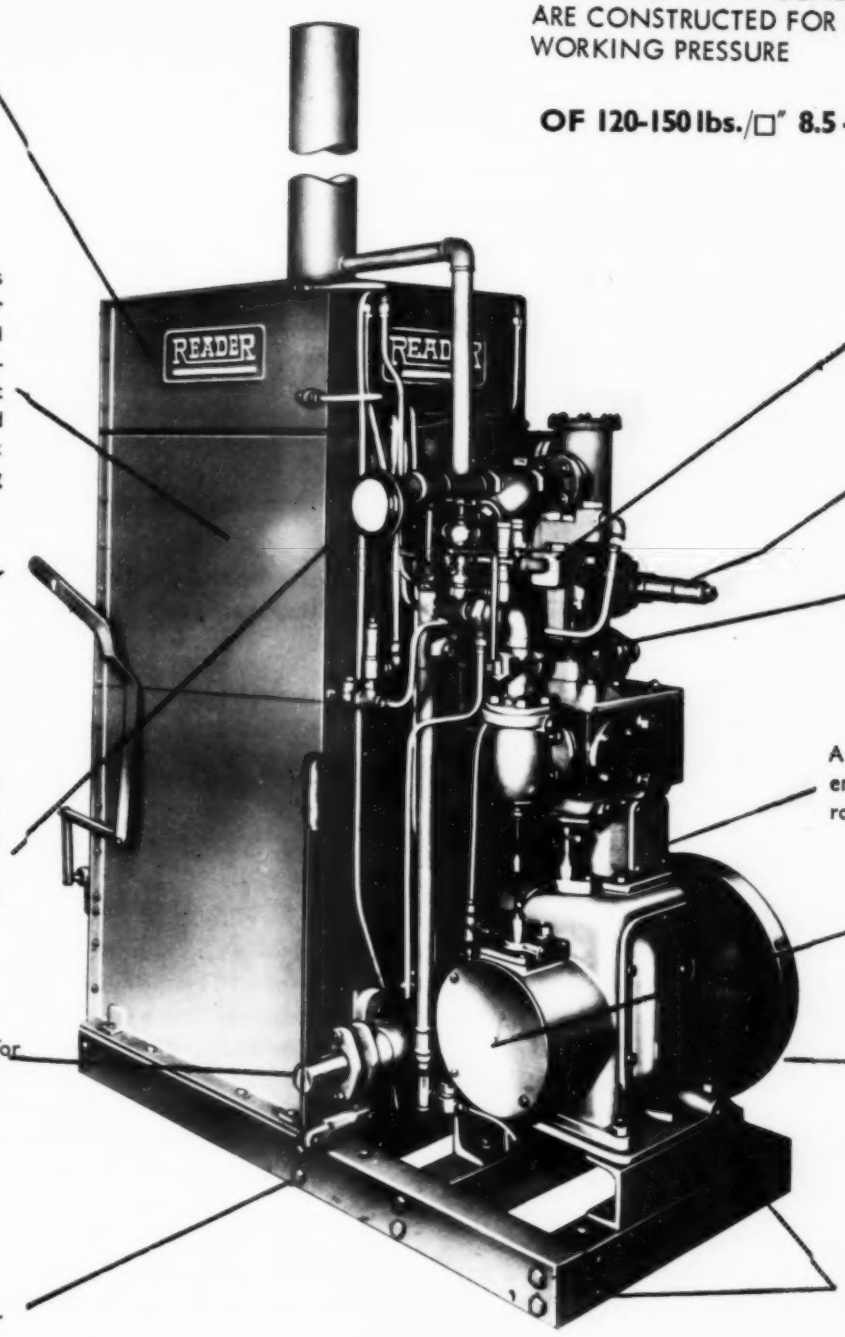
8. Visual indication of steam pressure is provided by a sturdy gauge, which is located in a prominent position; and a safety valve of adequate capacity is fitted, the discharge being directed into the chimney of the steam generator. Also fitted is an additional safety device to operate should the heating element become blocked.

9. Necessary moving of the power unit on a work site can be accomplished with a simple trailer. For longer transportation, a representative of the company has indicated that " it is possible to completely dismantle the unit for purposes of conveyance, but we are somewhat reticent to suggest that it should be assembled by unskilled labour without supervision from a person having technical ability."

10. The price, arranged for wood burning, packed for shipment f.o.b. British port is U.S. $2,486. This covers complete assembly, no extras being involved. For quantities, a reduction in price is made. The company anticipates that the unit could be made available for delivery in about 4 months after receipt of instructions. In special circumstances, this period might be reduced.

STANDARD STEAM GENERATORS ARE CONSTRUCTED FOR A WORKING PRESSURE

OF 120-150 lbs./□" 8.5 - 10.6 Kilos/□cm.



oiler feed tank.

emovable covers ving access for aning internal faces of the heat- g elements. A soot oor is also provided the firebox front external cleaning elements.

ontrol handle r firebox door.

eam temperature ge (fitted when quired); the steam essure gauge is cated on the front the engine.

nd feed pump for rting purposes.

undation bedplate.

Water feed pumps.

Safety valve.

Steam control valve.

A robust self-lubricating engine with direction of rotation easily reversible.

Speed regulator.

Heavy disc type flywheel having driving pulley attached thereon.

Facing drilled for attachment of sub-base or other structure required by pump, etc., etc.

The operation of the Power Unit is relatively simple, only a short period of time being required to raise steam. After starting the engine, the attention necessary is confined to maintaining a fire adequate for the power demand, the duplex pumps delivering the required amount of water to the feed tank and supplying a regulated quantity to the Steam Generator.

Stensland, Per G.
COMMUNITY DEVELOPMENT IN CITIES
African Community Development Conference in Libya, March 1958*
(Summary by Jean Ogden) pp. 39-48. (Including discussion).
711.1 : 301 (100)

1. The present paper was presented to an informal working conference on community development in Africa, and is addressed to people without necessarily any formal education. The following six African countries sent official representatives: Libya, Sudan, Ghana, Jordan and Morocco. Also represented were the United Nations, the European Productivity Agency and the United States International Cooperation Administration. Per G. Stensland is Regional Community Development Consultant with the E.P.A. in Sardinia.

2. In introducing the topic and the speaker, Jean Richardot (U.N. Community Development Advisor in Morocco) raised several points. Urban development, he noted, is relatively new in the community development field. The problem focuses primarily on the urbanization trend. Rapid industrialization taking place in underdeveloped countries has attracted many workers from rural areas. This urban influx has been so fast that adequate housing and social services cannot be immediately provided. Shanty towns or Bidonvilles spring up on the periphery of cities, and living conditions in these towns are miserable. Local governments all over Africa are aware of the problems but need both financial and technical help to solve them.

Community Development

3. Mr. Stensland sees community development as a process whereby people may learn to mobilize all their resources to meet their common needs. This process has plan and purpose; it is voluntary and self-directed; it requires community-wide education with or without formal schooling features. The U.N. definition of community development is a process designed to create conditions of economic and social progress for the whole community with its active participation and the fullest reliance upon the community's initiative.

Urban Communities

4. Like smaller communities, cities are places in which people share basic conditions of life. Like other communities, cities are both a physical environment and a way of life. But cities are peculiar human communities because of some unique characteristic features:

5. Cities cannot live by themselves. They exist by feeding on and serving a surrounding area. In that sense the city is an overgrown village which feeds on the farmland and serves the farmer in the vicinity of the village. The city, however, receives not only products from the surrounding area, but also people.

*Published by the Community Development Division, International Cooperation Administration, Washington, D.C.

Stensland, Per G. Community development in cities --2

And the city sends out services not only in the form of work done by people, but in the form of ideas. Thus the city would indeed die if the surrounding area were not there to buy its services and its ideas, and to supply its products and its labor force.

6. Cities are far more specialized than non-urban communities. It was in the urban community that groups and professions of specialists arose: guilds of craftsmen, special workers, and professionals who had to have a larger clientele than the local community could provide. So the city, by force of its nature and its size, shows more specialization, more division of labor, more opportunity for individuality than a non-urban community.

7. One very special kind of division of labor develops under conditions of industrial production. Urbanization and industrialization have gone hand in hand, as large numbers of workers gather to perform their special duties in rather precise work patterns. Many observers suggest that the most significant social fact of industrial life is that the worker does not do more than one small part of the whole job on a finished product. A worker does not make a finished product, but performs one task day in and day out. This kind of community created a pool for unskilled and semi-skilled labor, where man-hours rather than skills were bought and sold. There is a difference between the medieval guild and the modern factory in terms of work environment. The first may be described as a home for work, and the second as a market for labor. Thus, in a deeply personal sense the effect of industries in cities has created another specialized working community with less opportunity for individual expression.

8. Specialization and work sectionalization have made cities more impersonal than the non-urban communities. The city is a place where the immigrant from the surrounding communities can disappear. The ties are loosened: the neighbors do not work with you, and you do not need to know them. The vastness of the community permits you to be different. Your friends tend to be those scattered all over the city who have the same kind of interests and the same kind of work, not just those who are members of the clan or the village block.

9. To counterbalance their vastness and impersonality, cities have tended to develop special techniques for cooperation: such as clubs and civic organizations. The cities also developed special means of communications, including the telephone, the cinema, radio, television. While these may have become more important to people in rural and small communities than to those in the cities, their real significance lies in the fact that they are carriers of urban, not rural culture. This gives awesome power to the cities.

10. Cities are more complex and sometimes grow faster than non-urban communities. Related problems plague the urban citizen: crowding in houses, congestion of traffic, noise, dirt, smells, inadequate ways of disposing of both traditional and new wastes, control of disease, ugliness. Most of these problems are potential in any community, but they are compressed, exaggerated, concentrated, in cities.

Stensland, Per G. Community development in cities --3

11. The compensations of urbanization, however, are as varied as its problems. Cities quite obviously have resources, economic as well as cultural that are immensely greater than those of the rural open country communities. This places a double responsibility on the urban community and presents a double chalenge: First, the resources of the urban centers must be fully used and used with a sense of coordination and minimum waste. Second, the urban centers must realize to the fullest their opportunity to serve effectively the surrounding area to insure their own continued security and development. Indeed, they should develop much of their urban resources for the purpose of such service.

12. Some have suggested that great cities (even New York) are actually only a lot of small communities put together in one city. It is true that " neighborhoods" have slowly formed themselves in areas where people live because they are close to their common work, because they have the same immigrant background, because they speak the same language, because they knew each other in some other place in the world, because they earn about the same amount of money and can live the same kind of life. These neighborhoods offer a kind of security that the city as a whole lacks. There are such remnants or memories of community even within a very large city. However the idea that anything similar to village communities can exist within a great city is more romantic than accurate.

Community Development in Cities

13. It is suggested that there are two kinds of community development efforts in urban areas. One is an urban variation of the rural community development movement, and the other is a regional effort, including the hinterland on which the city depends for much of its economic strength.

14. Urban community development should provide opportunities for unity within diversity, for well-rounded work experiences, for personal contributions and sociability in the impersonal city environment, for intelligent use of the new ways of communication to build up direct participation in group life. Community life should first be built up in the neighborhood. At the same time provision should be made for a sharing of experiences among neighborhoods. There should be at least one phase of the project in which all neighborhoods can participate.

15. There needs also to be a " special interest" approach to community development in cities. The youths, the recent arrivals, working mothers, old people (especially the retired), and the white collar group in search of a social role between laboring groups and employers: all these and others should be

Stensland, Per G. Community development in cities --4

given special attention. The quality of a city is tested in the forming of its youth, because this generation lacks even the memory of the " old community." The newcomers face a constant conflict between the ideals and mores of the villages or towns they left and those in the new, strange society. The process of community development for this group is the very heart of the techniques.

16. Community development projects should cut vertically and spread horizontally. With such a double action area, a wise coordination of neighborhood efforts and special interest activities is required. This can make the city a place where people share the basic conditions of life with common desires and common outlooks: a place which can be called a community.

Community Development in Regions

17. While such problems as slums, juvenile delinquency, traffic, etc. can have a limited local nature, they can also be looked at as the common concern of several neighborhoods. Other problems like soil conservation, water supply, market for goods, access to special services are still less local. Thus regions emerge as areas in which people share the basic conditions of life. The same general principles of community development hold, and cities play a crucial leader role in regional development.

18. Since local communities cannot survive in dying regions, leader cities should initiate cooperative study and planning schemes where all communities can help define the point of survival or the minimum services and means for future regional vitality. Communities learn from each other and progress through shared experience. Communications networks connecting the city with its hinterland should provide two-way flow of people and ideas, as well as of goods and services. A hierarchy of leaders and experts should be recognized and called upon for the larger community or the whole region. The urban institutions of higher learning need to take up the job of becoming the regional home of aspiration and thinking.

19. Bigness in government, economic and culture, endangers the opportunity for the individual citizen to participate. Large governmental operations become impersonal and mechanical. Decentralization is needed continuously for the survival of man as a participant, and the cities should take the initiative of sharing regional development with their neighbors to strengthen local democracy.

20. For the successful performance as leader city in a region, the city needs to learn and demonstrate to the smaller communities the unique urban version of community development. It needs to become the center of education for community development--to be the dispersal point for all kinds of information and knowledge

that is wanted for sound development in the rural communities. It should act as a center for workshops and institutes and develop techniques in work organization, as well as being the common ground for conferences in which the non-urban communities can share their experiences. In this way the city can rise to the position of the educative community in the family of human settlements.

Organization of the American States, Interamerican Economic and Social Council.
SECOND INTERAMERICAN TECHNICAL MEETING ON HOUSING AND PLANNING.
Lima, Peru, 1958.
711.1 (8) (7)

1. The second meeting of this technical group interested in housing and planning in the Western Hemisphere was held last November. Some of its documents have begun to come into our hands, and we may now present some information about the discussions which took place there. The final report has not yet been received, nor have all of the individual documents; so our presentation will at best be sketchy.

2. Discussion took place along the following lines:

a. Housing of social interest: This included consideration of information exchange on the development of programs relating to such housing, as well as on experiences relating to the organization of housing institutions within a national housing program. Building materials and methods were also dealt with, with special reference to the use of local or native materials, the establishment of local basic industries, building methods, the standardization of materials, technical standards, the availability of craftsmen and labor, and transportation.

b. Urban and regional planning: The first category under this topic was the study of the problems presented by unrestricted expansion of cities as a consequence of migration, including the use and utilization of physical factors and natural resources. A second category involved the study of " shack towns," considering the economic and social programs designed to eliminate their causes, as well as provisional emergency measures and prospects for complete eradication or transformation. (These makeshift residential areas, lacking essential elements for minimum living standards, are known as " Bidonvilles" in the Middle East and as " barriadas marginales" and by several other names in Latin America.) A third category considered professional training in the planning field, including the need for more facilities leading to a broader and more intensive professional education at several levels. Finally, education was linked to civic action to enable the people to cooperate in programs for community development and maintenance.

c. Inter-American technical activity in housing and planning: First programs, cooperation and liaison arrangements were considered. Several suggestions were discussed leading to the optimum orientation of the technical activities on an international basis, with the possible cooperation of national technical institutions, as well as through appropriate liaison arrangements. Special topics were also discussed.

Organization of American States... Second housing and planning technical meeting -2

Documents of the Conference

3. Fifty-eight documents were distributed in connection with this meeting, and most of these related directly to the outline of the agenda just discribed. To give some idea of their content, we list here a few of them which appear interesting and of some general application. Most documents were published in Spanish, and we have roughly translated the titles. We have noted where another language edition also appeared.

a. Research in building materials and methods in the United States, by the U.S. delegation (English only). Document 11.

b. Programs of rural housing by the delegation of Colombia (also in English). Document 17.

c. Solutions to the problem of low-cost housing, by the delegation of Colombia. Document 26.

d. Pilot-project for regulating a municipal cooperative for building houses through directed self-help, by the delegation of Brazil (Portuguese only). Document 31.

e. Study of impoverished quarters (barrios), by the delegation of Argentina. Document 40.

f. Normalization and modular coordination, by the delegation of Argentina, Document 44.

g. Programs of mutual strength and aid or of self-help construction in Chile, by the delegation of Chile. Document 49.

4. Many of the other documents were in the form of brief proposals to the meeting. One of these, by the delegation of Peru, dealt with planning research. It noted the meager and scattered nature of sources of statistical information for planning, and it pointed out the impossibility of carrying out essential national, regional and community planning without full knowledge of the physical, social and economic factors at various levels. The use of existing sources, it held, was responsible for the lack of flexibility of regulatory plans. To meet this problem, this document suggested creation of research agencies to obtain the required kinds of statistical information needed for national regional and local planning. Such research agencies should coordinate their work with planning agencies and research centers established in universities and other institutions.

M.T.

Martin, Bruce
MODULAR DESIGN INFORMATION SHEETS 4, 5, 6 and 7.
Architectural Design, April and May 1959.
721.013 (100)

1. Continuing a practice begun with the April issue of EKISTICS, we present four more of Bruce Martin's useful and instructive Modular Design Information Sheets. The earlier Sheets are to be found in the April and May issues.

THE MAIN GROUPS OF BUILDING COMPONENTS

All components for building—as distinct from materials like sand, sisal, wool, nylon etc. which possess no fixed dimensions—fall into three main groups, each possessing its own distinctive dimensional characteristics. These groups have been defined as follows:

SECTIONS

Building material formed to a definite cross section but of unspecified length. Sections are usually manufactured by a continuous process such as rolling, drawing, extruding or machining.

UNITS

Building material formed as a simple article with all three dimensions specified, complete in itself but intended to be part of a compound unit or complete building.

COMPOUND UNITS

Building material formed as a complex article with all three dimensions specified, complete in itself but intended to be part of a complete building.

LIST OF COMPONENTS REQUIRING MODULAR DIMENSIONS

(N.B. This list has not been finally agreed and will require supplementing and checking in the course of modular standardization.)

(1) Sections

Angles, bars, battens, channels, 'T' sections, timber mouldings, stair treads, 'T' sections, tubes, weatherstrip.

(2) Sheets

Aluminium, asbestos, chipboard, copper, cork, felt, fibre-board, glass, lead, linoleum, paper, plaster, plastic, plywood, sheet fabric, steel, straw, wood-wool, zinc.

(1) Bricks

air bricks, common bricks, engineering bricks, facing bricks, glazed bricks, insulating bricks, paving bricks.

(2) Blocks

copings, floor blocks, flue blocks, kerbs, lintels, paving slabs, quadrants, roof blocks, sills, wall blocks.

(3) Tiles

floor tiles, ridges, roof tiles, shingles, slates, wall tiles.

(4) Panels

doors, floor panels, roof panels, wall panels.

(5) Pipes & Pipe Fittings

ball valves, drain pipes, drain pipe fittings, flue pipes, gutters, rainwater pipes, rainwater pipe fittings, taps, waste traps.

(6) Fastenings

bolts, connectors, hinges, latches, locks, nails, screws, wall ties.

(1) Structural

beams, door frames, joists, partitions, stairs, stanchions, trusses, windows, window surrounds.

(2) Heating

boilers, convectors, fires, meters, radiators, refrigerators, towel rails, water heaters.

(3) Sanitary

bath assemblies, lavatory basin assemblies, sanitary incinerators, shower baths, tanks, washing machines, WC assemblies.

(4) Lighting

fluorescent tubes, lamps, meters, switches.

(5) Cooking

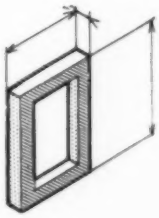
cookers.

(6) Ventilation

fans, ventilators.

(7) Equipment

cloakroom equipment, fire equipment, kitchen equipment, office equipment, storage equipment.



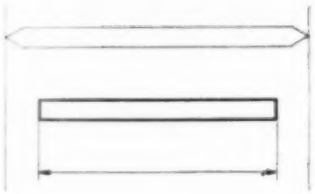
THE APPLICATION OF MODULAR SIZES TO COMPONENTS

Modular sizes will apply to the overall or nominal sizes of components including the building joint required. However, they will not necessarily apply to *all* the dimensions of every component, according to the nature of that component. Components that are to become fully modular—i.e. with modular dimensions in all three directions—will include most of those listed under the categories of Units and Compound Units. Exceptions are the lighting equipment components and those units such as pipes and fastenings which will be designed to occupy, as distinct from exactly fitting, an overall modular space; that is to say they may be modular in one direction only. Most of the components listed under the category called Sections will be modular in only two directions. For example, with sections such as angles, bars, etc., although it would be valuable for the purposes of easy stocking to have them in modular lengths, the length is normally left unspecified and only the cross sections will have to be made in specified modular sizes. Similarly, sheet materials will generally have two dimensions and the thicknesses, although it will be an advantage if these are made sub-modular, can be left unspecified—and the same will also apply to tiles.

Martin, Bruce. Modular design information sheets 4, 5, 6, and 7. --2

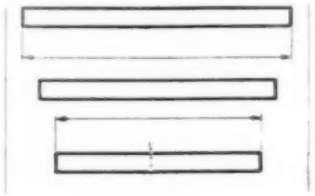
THE ACTUAL SIZES OF MODULAR COMPONENTS

The actual sizes of modular components are derived from the modular sizes according to the theory of tolerances which is based on the rule that each component together with its own joint occupies a modular space.



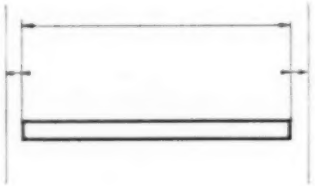
LIMITS TO ACTUAL SIZES IN MANUFACTURE

It is not possible to manufacture all components to *exactly* the same size: some are slightly larger and some slightly smaller than the size required. However, a limit has to be set to the amount of variation allowed and the actual size of each modular component must lie between the limits agreed for the maximum permissible size and minimum permissible size.



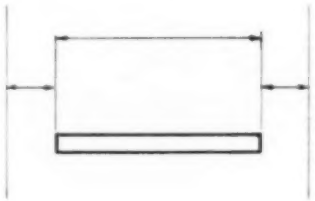
LIMITS TO THE MAXIMUM SIZE IN ASSEMBLY

The maximum size must be such that the component will occupy its modular space and still allow for an adequate joint; in other words the minimum necessary joint thickness determines the limits for the maximum permissible size of a modular component.



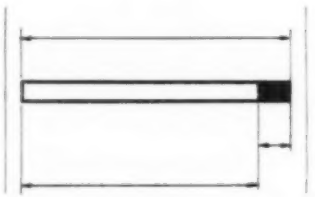
LIMITS TO THE MINIMUM SIZE IN ASSEMBLY

If the actual component is too small in relation to its modular size, the joint would then be too large for good construction. Hence, this factor of the permissible maximum joint thickness sets a practical limit to the minimum size of a modular component.



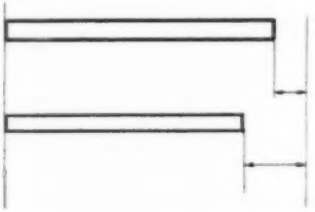
COMPONENT TOLERANCE

The component tolerance is the name given to the difference between maximum and minimum size for the component.



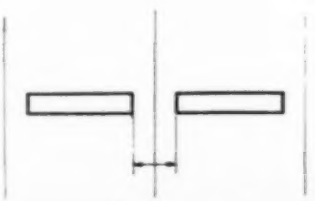
MODULAR DEVIATION

The modular deviation is the name given to the difference between the modular size of the component and the maximum or minimum component measurement.



MODULAR CLEARANCE

Modular clearance is the name given to the distance between two adjoining components when they are assembled or positioned.



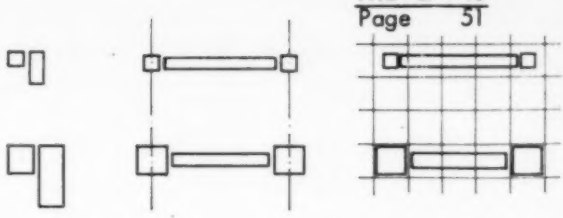
Assembly of components

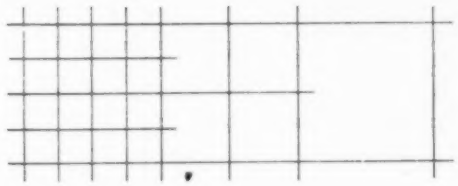
Components, whatever their dimensions, may be assembled: (i) in relation to one another; (ii) in relation to a structural grid; (iii) on the framework of a modular grid.

Assembly of modular components

Modular components may also be assembled in any of these three ways, but are most easily arranged on a modular grid. This is especially so when their sizes are closely related to the size chosen for the grid.

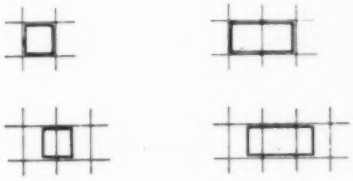
The choice of size for the grid is considered on Sheet No. 7. This sheet is concerned with general considerations on the relation of modular components to modular grids.



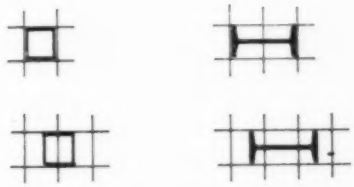


Assembly of modular components on modular grids; two alternatives:

Modular components either *fit* modular spaces of their own size or *occupy* modular spaces one module larger than their own size.



The example shows columns of a modular size fitting their corresponding modular space and the same columns placed in the centre of the next largest modular space.



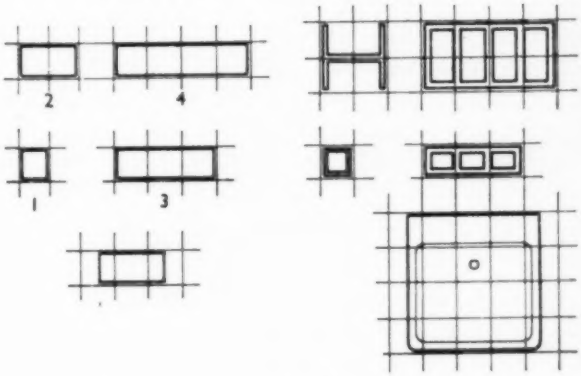
1. Components which *fit* modular spaces their own size

i. Where component sizes are an EVEN multiple of the module.

Modular components which *fit* modular spaces of their own size and have sizes an EVEN multiple of the module *centre on a grid line*. Examples are a column 2 M by 2 M and a block 2 M by 4 M.

ii. Where component sizes are an ODD multiple of the module.

Components which have sizes an *ODD* multiple of the module *centre on the space between two grid lines*. Examples are a column 1 M by 1 M and a block 1 M by 3 M.



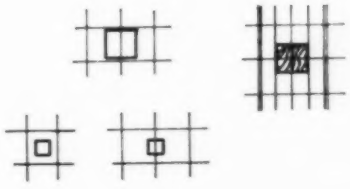
2. Components which *occupy* modular spaces one module larger than their own size

Where components occupy modular spaces one module larger than the component size, those which have sizes an EVEN multiple of the module centre on the space between two grid lines. An example is a lavatory basin 4 M by 4 M. The outlet for the waste pipe occupies the centre of the modular space.

i. Where component sizes are an EVEN multiple of the module.

ii. Where component sizes are an ODD multiple of the module.

Components which have sizes an *ODD* multiple of the module *centre on a grid line*. The example shows a column 1 M by 1 M in which the column *occupies* a space of 2 M, and the column with its two beams *fit* a space of 2 M.



Assembly of sub-modular components; two alternatives:

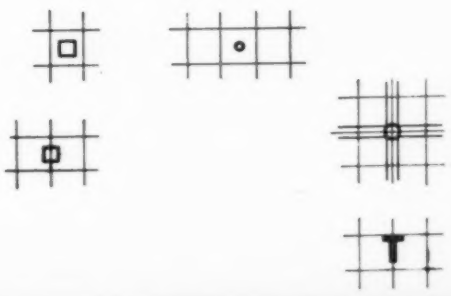
Sub-modular components may be regarded as components which *occupy* a single modular space or a double modular space.

1. Where they occupy a single modular space

When they occupy a single (ODD) space, they are centred on the space between grid lines. The example is a service pipe which occupies a space 1 M by 1 M.

2. Where they occupy a double modular space

When they occupy two (EVEN) spaces they are centred on the modular grid. Examples are a column on the grid and a tee bar on the grid. In the first case the column supports beams on the grid line which carry fully modular floor or roof panels. In the second case the tee bar carries modular wall panels.



Martin, Bruce. Modular design information sheets 4, 5, 6, and 7. --4

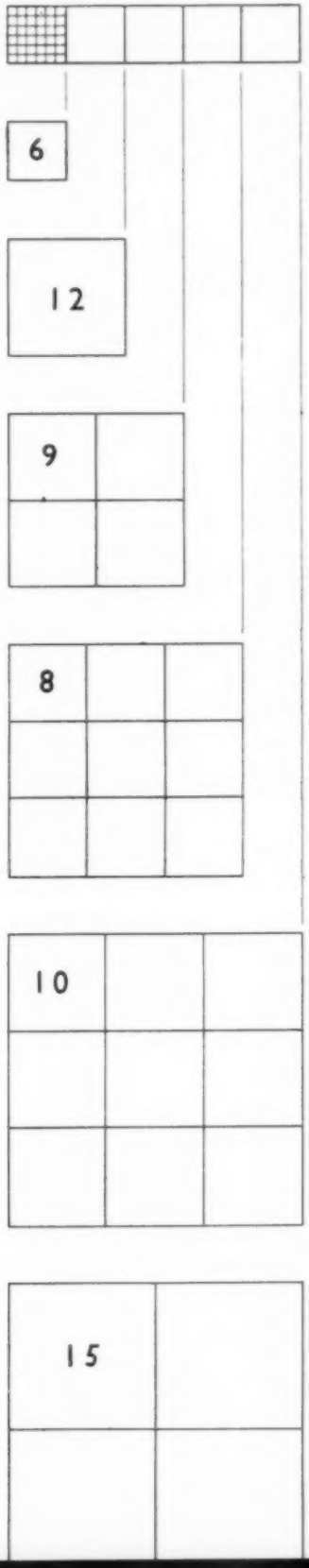
Purpose of modular planning grids

The primary purpose of a planning grid is to provide a system of reference for planning; that is, for relating the needs of the design to the means of construction.

Size of modular planning grids

The size of the modular planning grid is therefore chosen on the one hand to suit the particular design as determined by the user's requirements, and on the other hand to provide a convenient framework of reference for positioning the building material and components.

Although any multiple of the module could be used as a planning grid, certain multiples are to be preferred because they provide sizes that conveniently relate to the main building types. These are 6, 8, 9, 10, 12 and 15 modules which are, of course, all inter-related with each other by having in common the basic module. Secondly, they are all small multiples of a module and factorize easily; both these characteristics assist additivity and therefore greatly facilitate the assembly of components. Lastly all these sizes can be shown to be directly related to the 6-module planning grid.



The lowest convenient planning grid size is probably 6 modules (24in.) which would be applicable to house design. Reference is made in the Bailey Committee Report to house plans prepared on this grid.

The planning grid of 12 modules (48in.) is a generally useful grid, partly because of the wide prevalence of the 48in. sheet size and partly because of the standard spacing of timber studs at 16in. or 24in. in those countries using timber frame construction. Frank Lloyd Wright has used this grid size for many of his house designs.

9 modules (36in.) has for a long time been recognized as a suitable planning grid size for housing and has been used by the Ministry of Housing for the standard plan types prepared for the Housing Manual. It also accommodates 4 of the present standard bricks, and is a common size for the widths of plaster board. One of the conclusions in the Bailey Committee Report, 'Quicker completion of house interiors,' published in 1953, was that a preferred dimension of 3ft. should be used for the preparation of house plans, which would lead to economies in design as well as having the other advantage of being suited to the scale of the small house and the normal activities in it.

The use of an 8-module (32in.) planning grid size is a recent innovation. It underlines the 64in. grid which has been used for certain school construction. It may, however, have a wide application for traditional house design since it is twice the standard joint spacing of 16in., is a convenient spacing for rafters for light roof construction, and is one-third of the standard board size of 8ft. It is also a useful size for door widths, window widths, and narrow passage ways. Furthermore, 3½ bricks, that is, 31½in., may be conveniently arranged to fit the grid size.

The planning grid size of 10 modules (40in.) is well known as that recommended in B.S. 1708: 1951 as a basis for modular coordination. It was adopted by the Ministry of Education for school design to replace the immediate post-war size of 8ft. 3in. and is still widely used to-day. It is a convenient size for the width of most standard panels, but is rather wide for doors and for casement windows. Its multiples of 80in., 120in., 160in. and 240in. are suitable structural bay sizes and a number of prefabricated systems of steel frame and concrete frame construction are based on this grid.

15 modules (60in.) as a planning size, has not been applied to any great extent, but may become useful for factories and industrial layouts. It is a factor of 10ft., 15ft. and 20ft., which give useful nominal widths for roadways and structural bays.

Kruger, A.J.
THE SUNLIGHTING RULE
Publication No. 104, the Research Institute for Public Health Engineering, T.N.O.; reprinted in News Sheet of the International Federation for Housing and Planning, March, 1959. pp. 15-21. Illustrations.
628.92 (100)

1. Here is described a simple appliance and technique for predicting the sunlighting and the daylighting from a drawing. A.J. Kruger is with the Research Institute for Public Health Engineering T.N.O. (The Netherlands).

Introduction

2. In the planning of building projects it is necessary to ensure that sufficient daylight can enter the building. This is an imperative necessity on grounds of hygiene. In addition, and rightly so, an increasing measure of attention is being paid nowadays to the entry of direct sunlight. For achievement of this object great care must be observed in deciding upon the place, dimensions and positioning of the windows. Unfortunately this is only too often done by mere intuition (or at any rate not on a calculated basis)-and great disappointments may thus be experienced. The precision required is shown by the fact that in some cases the times of sunshine may undergo considerable alteration when the orientation of the building is varied by only 15° to 20°. For certain months of the year this may represent a difference of two hours sunshine per day.

3. Important considerations in regard to sunlighting are:

a. The duration of sunshine (from a clear sky) on different days of the year; and

b. The amount of heat received per hour, or per day, for different times throughout the year.

4. Some idea of the daylighting of an indoor point is afforded by the value known as the "sky factor," which is the ratio of the intensity of illumination at that point (due to direct, unattenuated light from a sky with the same brightness in all directions) to the intensity of illumination at a point on a horizontal plane in an open field at the same moment. The sky factor for a given point is therefore a measure for the intensity of illumination at that point insofar as this is due to the part of the sky that can be seen from that point. If an exact valuation of the daylighting is required, a correction should be made for the indirect lighting due to reflections from outer and inner walls and to the fact that the transparency of the windowpanes is less than 100%.

5. There are various methods and appliances to help in arriving at an objective determination of sunlighting and daylighting. But these are suitable only for determining the situation within existing buildings.

Kruger, A.J. Sunlighting rule --2

6. A new instrument, the " sunlighting rule," has been evolved in the Netherlands by the Research Institute for Public Health Engineering T.N.O. The instrument is very easy to use, of low price and modest dimensions. With this aid the sunlighting and the sky factor can be determined straight away from the preliminary drawing. After the observer has adjusted the instrument on the basis of a few simple particulars which can be determined on the spot or from a drawing of the site, a diagram shows him at a glance, for every month of the year, the times of day between which there will be sunshine at a given point provided the sun is not clouded. The amount of radiant heat received per square meter of surface is determined for every hour of the day and for every month of the year by means of a second diagram. The sky factor is found in a third diagram by counting a number of small " rectangles," each of which represents a sky factor of 0.12%.

7. With the sunlighting rule the observer is not only able to determine the sunlighting times corresponding to a given frontage aspect for points in rooms situated behind the frontage concerned, but he can also ascertain the influence exerted on the sunlighting and sky factor by:

a. Obstructions situated at a distance from the frontage;

b. Obstructions projecting beyond the frontage;

c. The position and dimensions of the window.

Applied Projection Method

8. Principle: Sunlighting and daylighting problems are solved chiefly by the choice of a suitable projection method, enabling the representation of spatial conditions on a horizontal plane. Several good solutions have proved possible, and the method of projection selected for the sunlighting rule has found general acceptance.

9. In order to assure proper understanding of this projection method it is necessary to imagine the point P whose sunlighting is to be determined, as being surrounded by a hemisphere on which the whole environment (with P as a centre) is projected. For example, in fig. 1a the projection of the sun on the sphere is point B. The vertical plane passing through the vertical PZ and point B cuts a horizontal plane through Z in a straight line l. If the arc ABZ is imagined to be rolled out along this line, then ZA' = arc ZA and ZB' = arc ZB. The same can be done for all points on the hemisphere. It will be noticed that according to this method the horizon is represented as a circle with the zenith at its centre. In fig. 1b the southward direction is also shown. The radius of the circle is equal to an arc like ZA. Point B' is situated on a radius which forms with the southward direction an angle β of fig. 1a.

News Sheet of the International Federation for Housing and Planning. March, 1959.

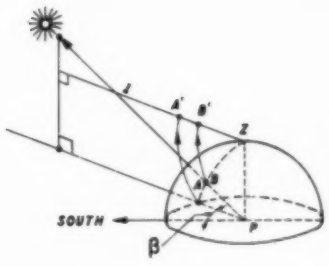


FIG. 1a

Fig. 1a. Point P may be considered to be surrounded by a hemisphere of any desired radius.
The projection of the sun (considered as a light source concentrated at a point) on the hemisphere is point B.
This point is determined by the angle β and by the length of the arc ZB.

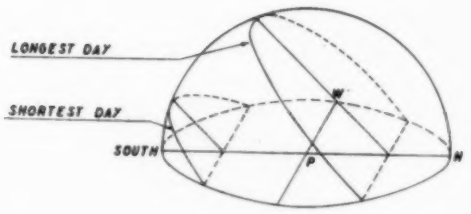


FIG. 1c

Fig. 1c. Representation of the orbits described by the sun on the shortest and the longest day.

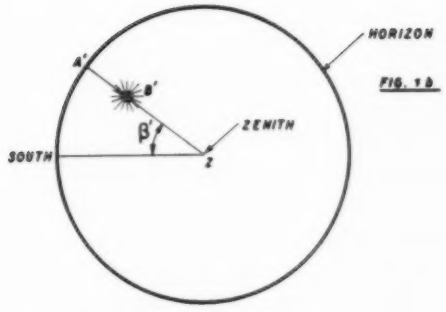


FIG. 1b

Fig. 1b. For every point on the sphere there is a corresponding point inside the circle.
This corresponding point is situated on the radius which forms an angle β' equal to the azimuth β with the line taken as southward direction.
The distance of the point of projection from the centre (Z'B') is equal to the length of the arc ZB.
The radius of the circle is equal to the arc ZA.
The zenith Z is represented as the centre, whilst the horizon is depicted as the circumference.

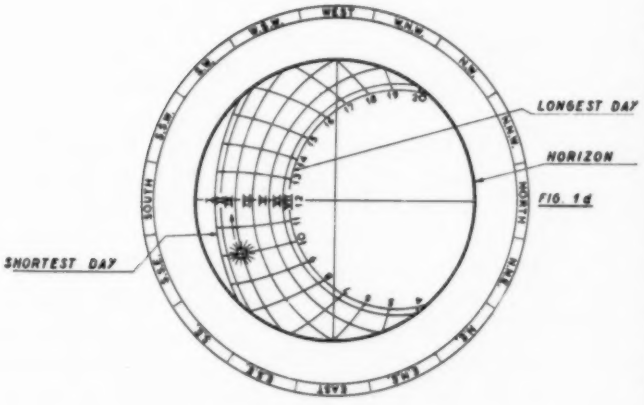


FIG. 1d

Fig. 1d. Projection on a plane surface of the orbits described by the sun on the dates roundabout the 21st of the various months
I *22nd December (shortest day)*
II *20th Januari and 22nd November*
III *19th February and 23rd October*
IV *21st March and 23rd September*
V *20th April and 23rd August*
VI *21st May and 23rd July*
VII *21st June (longest day)*

10. Representing the Sun's Orbits: The projection of the sun's orbits in this way can be easily understood. The sun daily describes an orbit in the sky which is higher in summer than in winter. Fig. 1c shows the orbits described on the shortest and the longest day only. Fig. 1d shows the projections of the sun's orbits on dates roundabout the 21st of each month, viz, the lines denotated as I, II, III, etc.

11. The total number of orbits shown in the projection figure is not twelve but only seven, for the sun describes the same orbit on days which are equidistant from the shortest day. Thus, with the exception of the orbits for the shortest day (I) and the longest day (VII), all the orbits are traversed twice a year. The lines 4, 5, 6, etc. running approximately perpendicular to the orbits, connect the orbital points at which the sun is positioned at integral hours of the day (4, 5, 6 o'clock, etc.). At 10 o'clock on the 19th February and 23rd October for instance, the sun is at the point shown in fig. 1d. Remember these are solar, not local times.

Determining the Sunlighting of a Room

12. Selection of sunlighting points in the room: In order to obtain a complete valuation of the sunlighting of a room it would be necessary to know the times of the sun's appearance and disappearance for a number of points in the room. When, as in houses, the main consideration is the physchological effect of seeing sunshine somewhere in the room, the position and area of the sunlight portion of the room are not of such great importance. What is important is the length of time during which there is sunshine in the room. Before sunshine can enter a room, it must pass through a window opening. It could be said that when sunshine passes through the window, there will be sunshine somewhere in the room. But it is best to consider the inside part of the window opening, so as to consider the screening effect of the wall thickness. Thus the present article considers only one point: the middle of the window sill (point P in fig. 2a).

13. Determination of sunlighting for different external wall orientations, regardless of existing obstructions: Fig 2a shows the horizontal cross-section of a room located along a facade facing west, assuming that there are no obstructions outside. This means that P' " sees" half the sky. Because of the thickness of the wall, point P " sees" somewhat less because part of the sky inside the angles β is also screened on both sides. Sunlighting at point P only is considered. To show which half of the sky is screened, the sunlighting rule is provided with a rotatable black disk (fig. 5k) which is positioned over the diagram of the sun's orbits (fig. 5g) so as to conceal half of the latter. On the back of this disk two rotatable black sectors (fig. 5i and 5j) are mounted to show the additional screening for every value of β. By rotating the diagram with the sun's orbits with respect to the black disk it is possible to show the effects of the adjusted screening on the times of sunlight time for every frontage aspect.

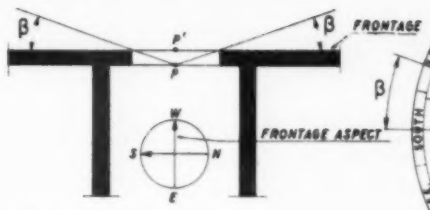


FIG. 2a

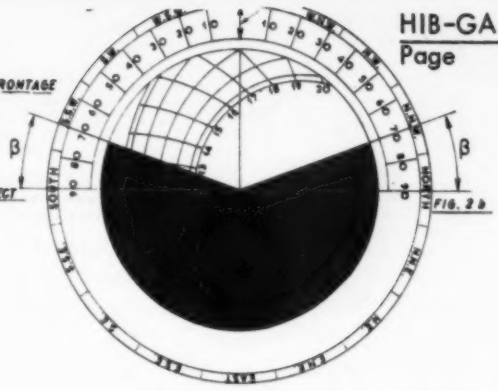


Fig. 2a. Horizontal section of a room situated along a frontage with a western aspect.

Fig. 2b. Projection for points P' and P.
The black half of the circle is the part of the sky that is screened off for point P'.
For point P the black portion inside the angles β is additionally screened.

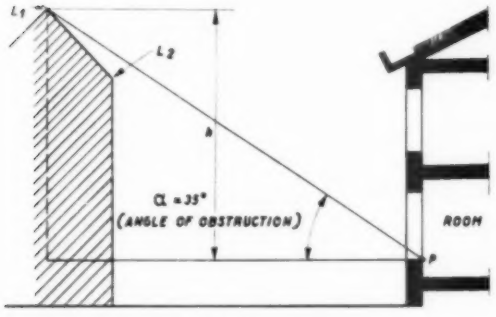
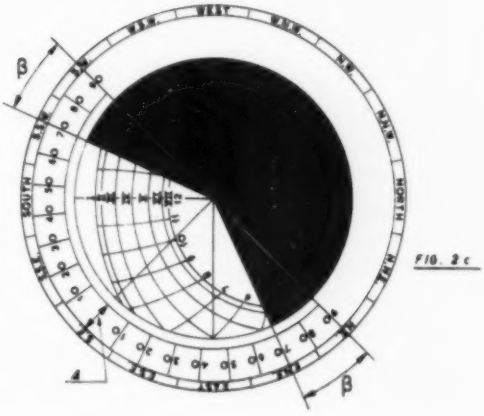


FIG. 3a



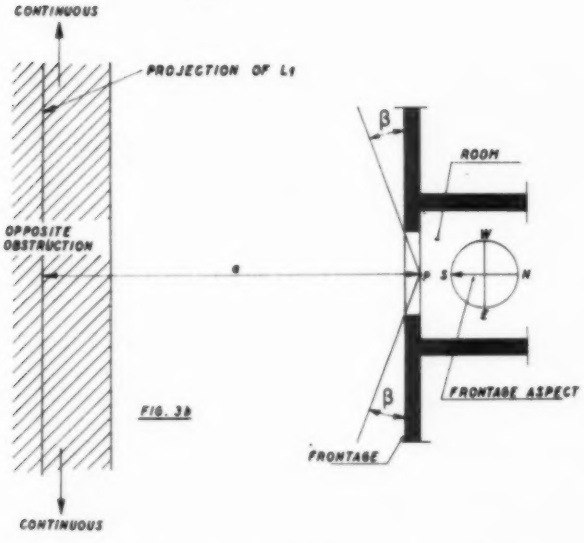


FIG. 3b

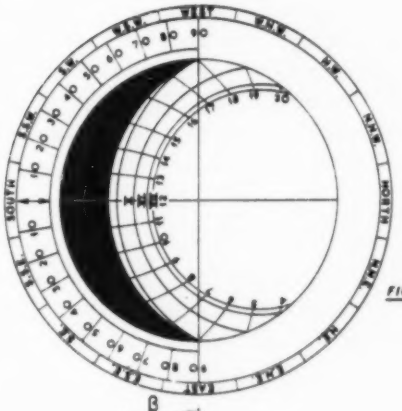


Fig. 3a and 3b. The vertical and the horizontal section respectively in the case of a long uninterrupted row of houses of the same height throughout, situated opposite the frontage under survey.
The frontage aspect is in this case southward.

Fig. 3c. The projection of the portion of the sky that is screened off by the obstruction opposite at an angle of obstruction of 35°.

Fig. 3d. The complete projection figure for point P.

Kruger, A.J. Sunlighting rule --4

14. Determining the effect of uninterrupted obstructions of uniform height and parallel to the building: In this case the highest visible boundary (fig. 3a, line L1) is horizontal. If point P is close to the opposite row of houses, line L2 will be the highest visible boundary. In order to determine the screened portion of the sky for point P one should imagine a plane passing through point P and the highest visible boundary of the obstruction concerned. This plane cuts the hemisphere around point B by a great circle (fig. 4a), which in projection (fig. 4b) is a curve passing through B1. The shaded portion represents the screening by the obstruction.

15. The portion screened in the case of fig. 3a is now the black crescent in the projection figure 3c. The complete projection of this case is shown in fig. 3d. The building under survey has a southward aspect. It will be seen that in this case there is no sun at all in the winter months. About 1st March and 1st October the sun shines just above the houses opposite. The duration of sunshine is then 9 hours. In the summer months the duration is again shorter. On the longest day (VII) there is sunshine from 8:55 to 15:10 (3:10 p.m.). The screening for point P is determined entirely by the angle "a" between the plane passing through L and P and the horizontal plane. This angle can be determined from the equation $\tan a = h/a$. In fig 3a: $a = 35^{\circ}$. Since in practice the angle "a" may of course have different values, a number of different black crescents as shown in fig 3c are required. These are provided on either side of the rule (fig. 5a and 5b). A slide (fig. 5c) on which the rotatable disks referred to are mounted together with the sun's orbits diagrams and the black half circle for the sun building, can be moved over the rule. The slide is first placed over the projection figure on the rule corresponding to the particular angle of obstruction. Then the disk containing the sun's orbit is turned to the correct aspect with respect to frontage projection. Now the hours of possible sunshine can be read for the whole year.

Other Possibilities of the Sunlighting Rule

16. It is possible also to determine the sunlighting of points situated farther back in the room (using the fig 5h diagram). Furthermore, the instrument can be used to determine the sunlighting of:

a. Estimating influence of gaps in opposite structures.

b. Obstruction opposite not parallel to the facade under survey;

c. Obstruction opposite but not of equal height throughout;

d. The influence of balconies, galleries, etc., projecting above the window to be considered;

e. Obstructions projecting sideways from the window.

20. The manner of dealing with each of these cases is indicated in the manual accompanying the instrument. The directions also describe how the incoming solar heat and the sky factor are determined. Further information can be obtained from: Bouwcentrum, Weena 700, Rotterdam (P.O. Box 299), The Netherlands.

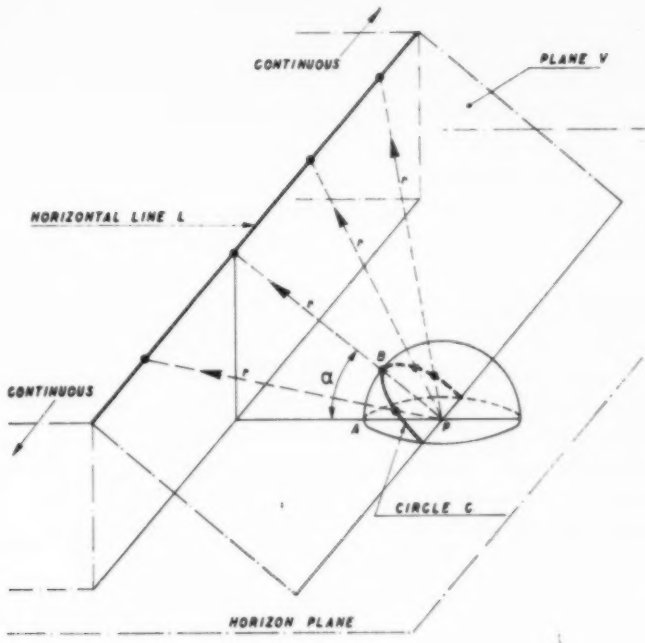


FIG. 4a

Fig. 4a. The horizontal line L in this figure is the upper boundary line of an obstruction of the same height throughout. The projection of this line on the auxiliary sphere is a great circle. Angle α is called the angle of obstruction.

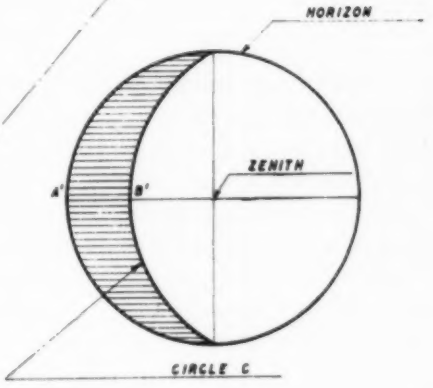


FIG. 4b

Fig. 4b. The distance A'B' is equal to the arc AB. The shaded portion represents the screening by the obstruction.

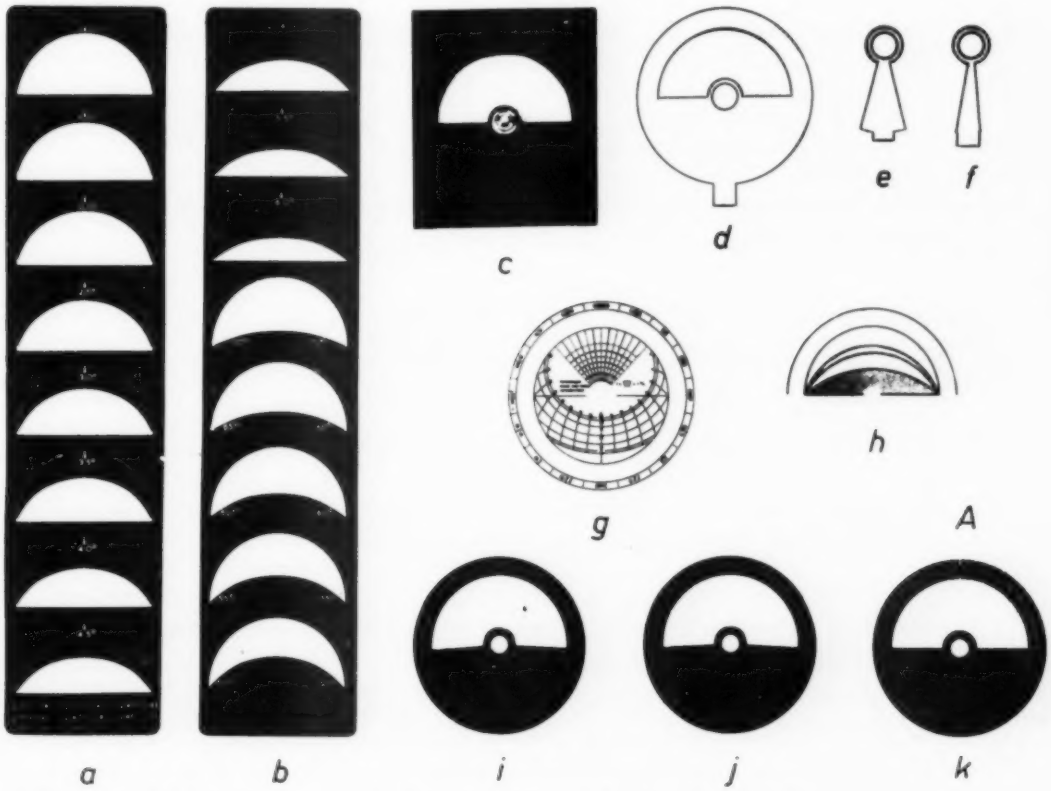


Fig. 5. The slide c, which has an opening, must be placed over the correct figure on the rule (a, b). According to the case to be judged, one or more of the parts d to k which are fixed to the slide must be turned to the correct position. In many cases parts d, e, f and h are not required and are turned away below the front disk k. The opening in the front disk can be reduced to any desired extent by turning the screening disks i and j outward from under the disk. The transparent diagram g with the figure on the rule as background can be viewed through the residual opening.

United Nations, Dept. of Economic and Social Affairs
REPORT ON A COORDINATED POLICY REGARDING FAMILY LEVELS OF LIVING.
ST/SOA/34, September 1957. 71 pages.
36 (100)

1. This report was prepared by a Working Group of seven experts, asked by the Economic and Social Council to make " recommendations for a co-ordinated policy regarding family levels of living, particularly in the application of broad programmes of social security, social assistance and related social services for family and child welfare." The Working Group was chaired by G.F. Davidson (Canada) and had as members Muslih Fer (Turkey), Pierre Laroque (France), Madame N.A. Muravyova (USSR), Hla Myint (Burma), Jean Paleologos (Greece) and Hernan Romero (Chile). The group was assisted by the U.N. Secretariat and by various specialized agencies.

Broader Framework of Policy

2. The elements of a family's level of living, broadly conceived, include:

a. Goods and services, ordinarily bought with the total money income of the family, including seasonal and supplementary earnings,

b. Goods produced and retained in the "subsistence sector" of the economy, such as home-grown food and home-woven clothing and also, in countries at the earlier stages of economic development, "free goods" such as fuel, fish and game, etc. which can be obtained for the labour of gathering and hunting them,

c. Goods and services relating to health, education etc., supplied by the State to the family; and also similar services provided by private organizations without charge,

d. Goods and services accruing to the family through supplementary and substitute incomes granted by the State and other organizations (these will include all types of social insurance and social assistance benefits in cash and in kind as well as private charity). This must be considered in terms of the real purchasing power of the family, due to economic forces, government consumer goods and services policy, rationality of family expenditure pattern and prior family debts. The conditions of work and involvement of the family in earning must also be considered;

e. The degree of security and the stability of the family income. The risk of unemployment, of crop failure and the adaptability of the economic and social organization to such developments.

f. Non-material aspects of the level of living: personal adjustment to family and social relations, level of appreciation of cultural and educational values, enjoyment of human rights, including the absence of discrimination based on race or sex.

U.N. Dept. of Economic... Report on a coordinated policy regarding family levels -2

3. The elements of a policy on family levels of living should start with the safeguarding and sustaining of the different sources from which a family's income or livelihood is derived. It should also provide for expansion of opportunities for productive employment as the family increases in size.

4. In a survey of the factors affecting the family levels of living, several influences were noted. Demographic factors considered were population growth and the size of the working population. On the economic side, the need to increase the total national output was cited, as were employment, income distribution and the relation of the fiscal machinery to inflation; and the growth of the money economy with industrialization was discussed. Social and cultural factors surveyed were family organization, social and economic attitudes and adaptability, and education. Administrative factors were treated as a special category.

5. Two general conclusions emerged from this survey. The first of these was that the problem of protecting the security of the family level of living in the underdeveloped countries is tied up with the process of rapid economic and social change. The second conclusion is that demographic, economic, social and administrative factors which affect the family of living are closely interrelated.

Policy Co-ordination

6. The fundamental unity of any policy relating to family levels of living is required because of the interdependence of the elements of the concept. No action in the social field should be undertaken without prior consideration both of its relationship to other programmes, existing or future, and of its economic and social repercussions: e.g. the relation of infant mortality to food supply and of the minimum working age to school facilities. It is necessary to prepare comprehensive plans integrating the various measures taken or contemplated for improving levels of living.

7. Leading principles. A comprehensive plan is understood to be a plan, or a series of co-ordinated plans, embracing the different aspects of a policy on levels of living, and covering the entire population of a given country. This does not mean that everything must be done at the same time, but merely that the plans should be drawn up for implementation over a period which may cover many years. The plan, taking into account all the elements of the level of living, should be prepared in the light of all the demographic, economic, social, cultural, administrative and other factors in the population concerned. Also considered should be past efforts and existing achievements.

8. The plans should not be governed by hard rules supposed to be equally valid for all countries and all times. It would be a serious mistake to suggest one or more formulae divised in the abstract or in terms of some average situation. Such an approach would lead only to disappointment. In the social field there is no

such thing as a general case, but only particular cases; the mere application to one country of formulae devised and used in others should be avoided. The plan should be the work of the government of the country concerned and implies creative effort appropriate to the nature of the situation to be dealt with. The plan should be flexible and allow for its own disposal or alteration if a better plan appears or if internal development or other circumstances strongly indicate a different line of action.

9. In drawing up plans, it is also essential to distinguish between what is desirable and what is feasible. Plans may be ambitious but should never be unattainable. The various factors already referred to, especially the economic factors, limit what can be undertaken in practice. Selections from among possible measures are largely governed by individual expected results. Thus:

a. It is generally better to work on key problems affecting social development as a whole, or at least on the ones affecting the more significant aspects of family levels of living--with a chain reaction to other aspects.

b. Preference should go to those measures producing the most solid results.

10. From these considerations, the following very general principles are derived:

a. Preference should be given to preventive measures.

b. Preference should be given to social measures which promote economic development.

c. Preference should be given to action directed to large masses of the population rather than to individualized efforts requiring action on behalf of each family separately.

d. Any co-ordinated policy on levels of living should be centered on the family, and emphasis should be given to measures and methods which associate individuals and families in the efforts made to raise their level of living.

e. For economic as well as for social considerations, it is necessary to stimulate initiative and to encourage a sense of responsibility rather than attempt to provide substitutes for these assets. Preference should be given to schemes by which individuals and families, through their spontaneous or organized associations, collaborate in the action undertaken in their interest.

f. Stress should be laid on the education of individuals and families in the significance and purpose of the measures being undertaken, perhaps as part of a larger educational effort.

g. As far as possible, legislation and machinery should be simple and easily comprehensible to the mass of the individuals and families who benefits from them.

h. Preference should be given to measures whose execution will not be hindered by material or psychological obstacles.

11. From these leading principles are developed priorities, considering from several points of view. First, the various elements of policies on family levels of living are related to priorities. The close link between employment, health and education is noted, and it suggested that quite different sets of priorities may develop in different kinds of cultures. Priorities are also considered in terms of the various categories of beneficiaries. One way of classifying beneficiaries is in terms of their relative degree of need, the extent to which they themselves cannot meet the requisites for continued life. The improvement of the income of the lowest income groups would be next, but there are certain difficulties in application here (including knowing the real income in some situations). Priorities may also be given according to age groups, with children clearly first, and the adults when temporarily disabled rank ahead of problems of the aged.

12. A third way of considering priorities is in terms of economic, social, geographical or other factors. Action should vary with the rural and urban setting, and should be balanced between the two. While employees are usually given priority over independent workers, small farmers and craftsmen should receive increased attention. Discriminatory priorities by occupation, for whatever reason, should be regarded as a temporary expedient.

13. A final way of setting priorities is in their relation of the various types of benefits and services. The benefits and services in kind are often more effective in developing countries, where the proportion of national income which could be distributed in cash form is usually low. Where cash payments are made, the initial policy should be flat-rate allowances rather than allowances proportional to family income. Lump sum and periodic grants should be adapted to the situations they aim at meeting.

Methods of Administration

14. There are four main groups of social services administration systems:

1. Public services operated by the community directly for the benefit of all elements of the population and without charge.

2. Voluntary or compulsory participation of the categories of individuals or families concerned, within a framework of either a mutual-help insurance or a co-operative association.

3. Provision of help for needy elements of the population only, and financing comes either from the community budget or by voluntary contribution.

4. Schemes based on the obligations of employers, embracing the various social services set up by employers for their staff, and compulsory contributions by employers to the welfare of their staff, and compulsory contributions by employers to the welfare of their employees.

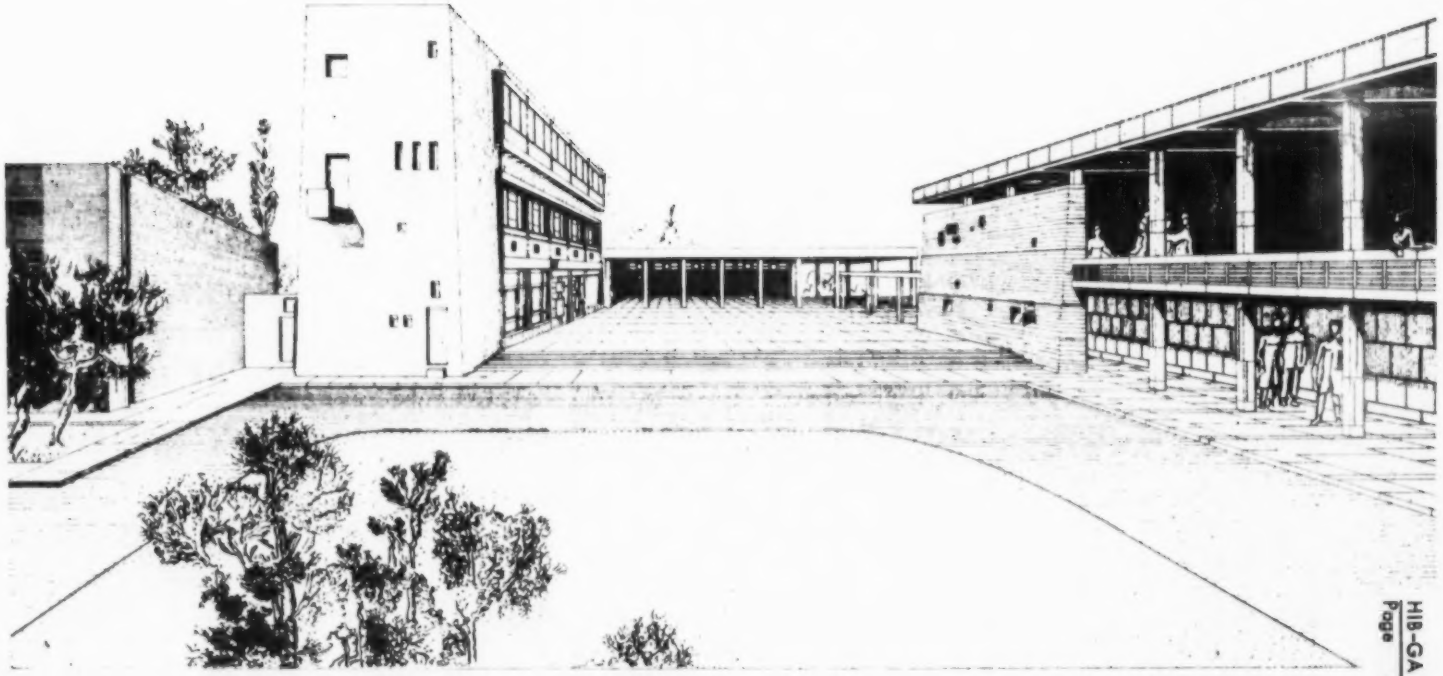
15. The question of which system is preferable is governed by various considerations. The degree of development of the particular country or community is important. A second factor is the nature and scope of the measures to be implemented: preference should always be given to measures in which the beneficiaries, as far as the nature of the service permits, are associated in the efforts made on their behalf. Finally, the choice of measures is dominated by the financial possibilities--themselves bound up with technical and financial factors which may tip the scale one way or another.

CURRENT WORK OF DOXIADIS ASSOCIATES

TWO ACADEMIES FOR VILLAGE DEVELOPMENT

Comilla, East Pakistan - Peshawar, West Pakistan*

NOTE: The illustrations on pp. 66, 70 and 74 are of Comilla. Those on pp. 67, 71 and 75 are of Peshawar.



THE ENTRANCE COURTYARD OF THE WEST PAKISTAN ACADEMY IN PESHAWAR

Doxiadis Associates

TWO ACADEMIES FOR VILLAGE DEVELOPMENT: Comilla, East Pakistan
Peshawar, West Pakistan.

727 (549)

1. The designs for these two academies were based upon a scheme first outlined by Michigan State University in August 1956, then amended by the Pakistan Ministry of Economic Affairs, May 1957, and translated into building requirements by Doxiadis Associates, July, 1957.

2. These requirements included:

Main Academic Block.

a. Minimum of 7 classrooms, each to cater for a number of 15-30 full-time students. (First phase average 15, maximum 30 students). One of these classrooms will be used also for demonstration purposes (7 x 650). A maximum of 16 classrooms.

b. Minimum of 6 offices for teaching staff, large enough to accommodate two persons in each office. (6 x 220). Maximum of 10 offices.

c. Library with an average capacity of 50 students and an attached office and workroom for librarian. Maximum capacity 150 students.

d. Auditorium for a maximum of 200 persons (to be formed as a multi-purpose room with stage, etc.) In the last phase creation of an auditorium of 600-700 persons perhaps as a semi-covered space or to be used for other purposes also, like sports, etc.

e. One research laboratory/museum with displays, etc.

Total covered space -- First phase: 12,380 - Final phase 39,150.

3. Auxiliary and Administration Block.

Total covered space -- First phase 2,125 sq. - Final phase 3,950 sq.

4. Students Residential Block

a. Hostel building to cater for an average of 150 residential (100 full-time, 50 part-time) students; each room to have a minimum of two and a maximum of three residents at a time. This building should have common sanitary and bath-room facilities. For ten persons of the fifty-part-time students, provision of single rooms with attached sanitary and shower facilities. Maximum: 500 students.

b. One room for a doctor and one additional room for special cases, treatments, etc. Final phase: small clinic of 6 rooms in total.

Doxiadis Associates. Two academies for village development... --2

c. A separate building near the hostel, to serve as cafeteria, to cater for an average of 80 persons at a time, with attached recreational room. This building should have independent facilities such as water closets. Kitchen and storage space should form part of the cafeteria. Maximum: 250 persons at a time.

d. Small mosque in the vicinity of the hostel for an average of 50 persons (covered area) and a total of 150 (under the verandah, in the courtyard), with normal facilities. Extension of verandahs and courtyard for 450.

Total covered space -- First phase: 28,550 - Second phase 95,750.

5. Staff Residential Blocks:

Total covered space -- First phase: 6,680sq. Final phase 14,100.

a. Ten three-bedroomed houses for full-time faculty members. (10 x 1800) Maximum: 20 houses.

b. Four three-bedroomed houses for foreign advisors, visitors, short-term students. (4 x 1800).

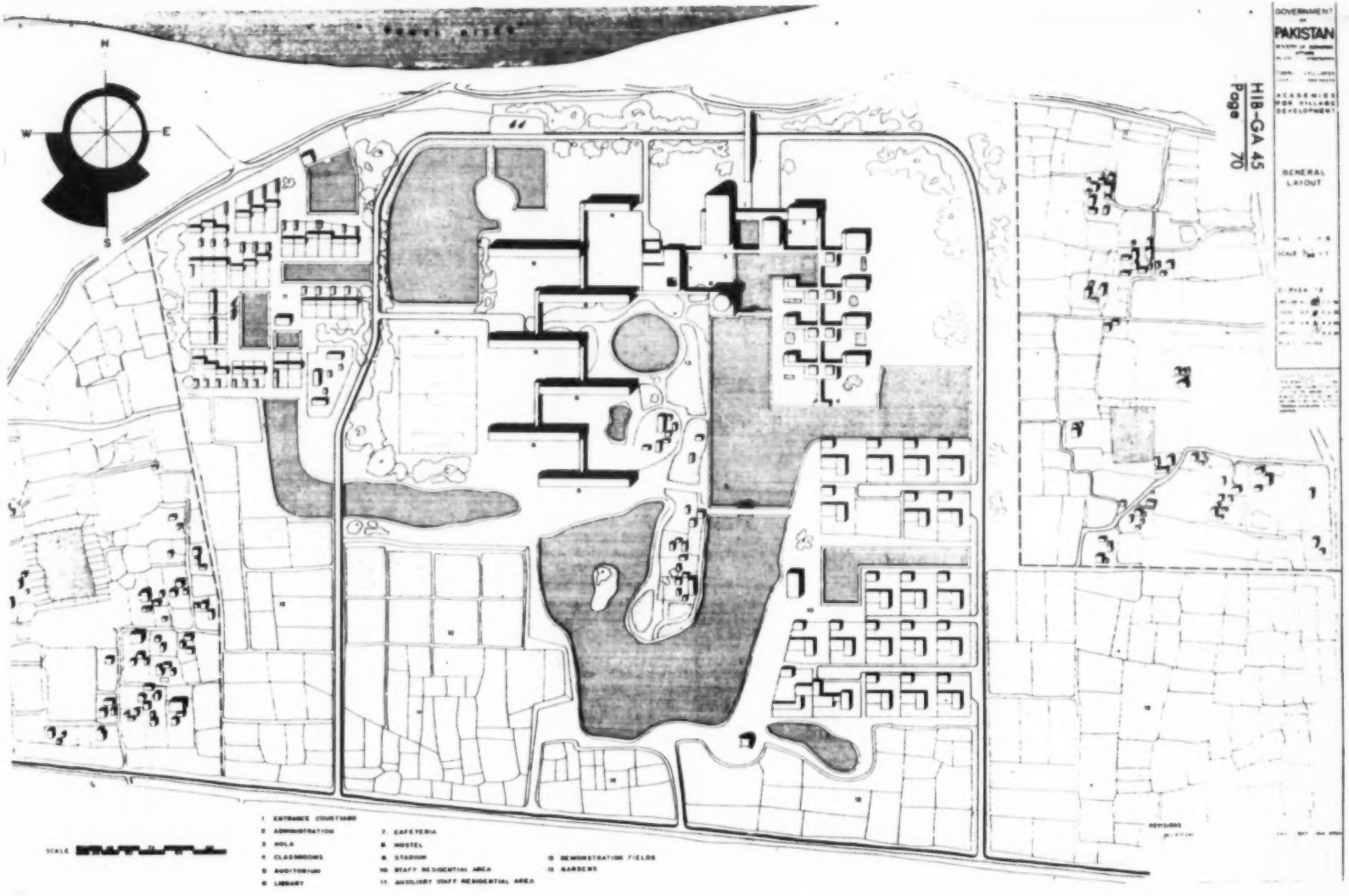
6. The different climates and conditions of these two regions determined two very different site plans though each contains essentially identical elements.

General Layout

7. In the hot humid climate of Comilla, E. Pakistan the already existing large pools (tanks) on the site have been utilized to their fullest to create a NS axis with a branch separating the academic block and the staff residential area. On the other hand the rest of the tanks are shaped so as to fit the landscape and to create areas serving the various functions of the academy. The same thoughts have been predominant in the utilization of the existing groups of trees. The main academic block is located to the NE side of the site and the students' hostels together with their recreational areas to the NW. The residential area of the staff of the academy is situated to the SE.

8. These groups of buildings are surrounded by a carriage road on a low embankment, which will protect the area from occasional floods of the surrounding low paddy fields which will be utilized as demonstration fields for the academy. The auxiliary staff houses are located outside the carriage road loop, NW of the main academy buildings.

9. Both the site and the climate demanded a form more compact in layout at Peshawar, W. Pakistan.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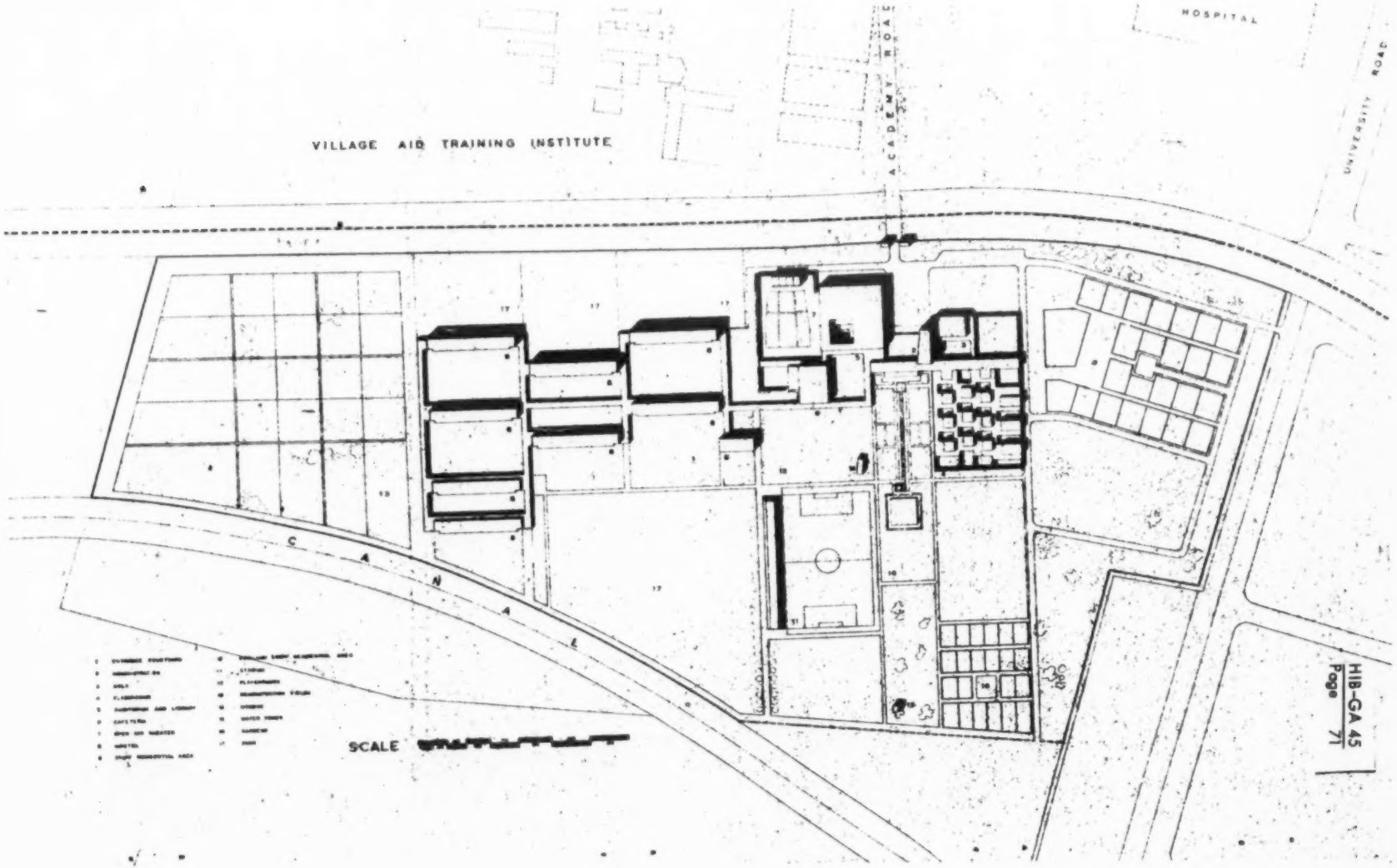
GOVERNMENT OF PAKISTAN
ACADEMIES FOR VILLAGE DEVELOPMENT
GENERAL LAYOUT
SCALE
1 ENTRANCE COURTYARD
2 ADMINISTRATION
3 AULA
4 CLASSROOMS
5 AUDITORIUM
6 LIBRARY
7 CAFETERIA
8 HOSTEL
9 STADIUM
10 STAFF RESIDENTIAL AREA
11 AUXILIARY STAFF RESIDENTIAL AREA
12 DEMONSTRATION FIELDS
13 GARDENS
REVISIONS


VILLAGE AID TRAINING INSTITUTE
ACADEMY ROAD
HOSPITAL
UNIVERSITY ROAD
CANAL
SCALE

Doxiadis Associates. Two academies for village development... --3

Classroom Block

10. In Comilla each classroom consists of the main classroom and a covered verandah with an open space in front for open air teaching. This area will be suitably landscaped and planted in order to provide shade for open air teaching. Adjoining each classroom, there is an office for the teacher and toilet facilities. Two of the maximum number of the 17 classrooms provided for the completed phase have adjoining spaces to be used as laboratories. The main covered walkway serving these classrooms ends at the main water tank of the academy with landing steps.

11. In Peshawar each classroom consists of the main classroom, a covered verandah and a patio for open-air teaching. Adjoining each classroom there is a small office for the teaching staff and toilet facilities. Two of the maximum number of 17 classrooms provided for the complete phase have adjoining spaces to be used as laboratories.

Administration Building, Aula, Great Auditorium, Library.

12. In Comilla this group of buildings is located to the NE side of the academy compound with direct access from the surrounding carriage road. They are so grouped as to have two open spaces enclosed by covered walkways into one of which the main water tank is extended.

13. The administration building is designed with 3 storeys. The ground floor covers only part of the site and provides for accommodation of the porter's lodge, auxiliary staff rooms, a staff meeting room and toilets. Free stairs lead to the first floor where space is provided for the student services, records room and toilets. On the second floor are located the academy principal's accommodation with 3 rooms for offices and toilet facilities. The two upper stories have a 12 ft. wide covered verandah on their south side.

14. The Aula (small auditorium) has a capacity of 250 persons and is designed as a multi-purpose room with a level floor, so that it may be also used for exhibitions, gatherings, etc.

15. The great auditorium has a capacity of 600 people and is designed complete with stage and lobby. It is provided with an inclined floor and all auxiliary spaces and facilities such as dressing rooms, store rooms, etc.

16. The library is located by the main water axis overhanging the water tanks and is connected with covered walkways with the other groups of the buildings.

17. In Peshawar the great auditorium and library, which belong to the final phase are enclosed in the same block with their foyer opening onto the same patio. In the great auditorium care has been taken for the provision of a gallery which, according to the conception of the structure, is not going to be an expensive one,

and it is intended to accommodate women under purdah. The great auditorium is designed with an inclined floor and provided with all auxiliary spaces covering facilities such as dressing rooms, store-rooms, etc.

18. The patio of this block opens directly onto the terrace of the cafeteria and the library, which presented in general lines, consists of a ground floor space and a mezzanine.

19. The administration block is designed as a three-storey building. On the ground floor we have the entrance hall, the porter's lodge, a room for the auxiliary personnel and a meeting room for the teaching staff with two adjoining cubicles for interviews. On the first floor we have provided spaces for services which are in direct connection with the students. On the second floor suitable spaces are provided for the senior administration staff who have very little or no direct contact with students.

20. The Aula (small auditorium) has a capacity of 200 persons and it is designed as a multi-purpose room with a level floor so that it may be also used for exhibitions, gatherings etc.

Students Hostels

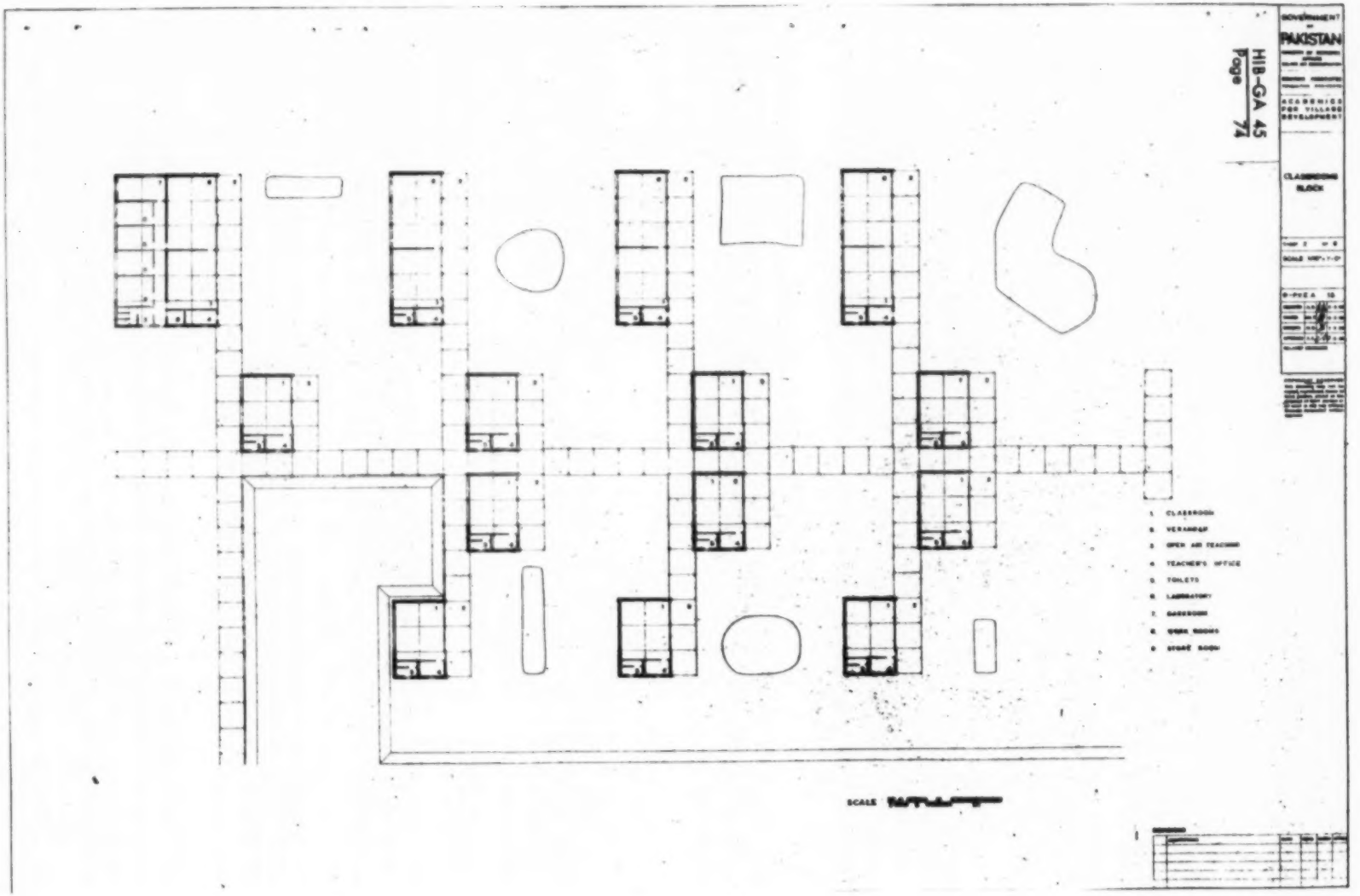
21. The rooms of the student hostels are for two beds, provided with a wash basin, two clothes cabinets and a double desk. They are provided with a 7 ft. wide verandah, so that the beds may be carried outside during the hot periods of the year.

Specifications

22. In both projects the buildings will have a reinforced concrete frame with brick walls unp' stered and painted on the outside. On the inside they will be plastered and painted with distemper water colour. The floors will be of reinforced or plain concrete covered with terrazzo with skirtings of the same material. The floors of the connecting walls and covered walk-ways will be of plain concrete with colour added while pouring. In Comilla care will be taken to use the lighest materials for the purpose of securing an adequate ventilation. Bamboo matting and thatch on steel supports will be used for the roofs of the covered walkways.

23. The elements of the reinforced concrete skeleton will remain unplastered on the outside. For this purpose the shutterings will be appropriately treated on the inside so that when removed the surface of the concrete will present only the tecture of the wood. They will be painted with special cement paints.

24. Windows will be of steel. Inside doors will be flush of wood. Windows and doors will be painted with oil paint. Wherever possible, double roofs will be provided for insulation purposes.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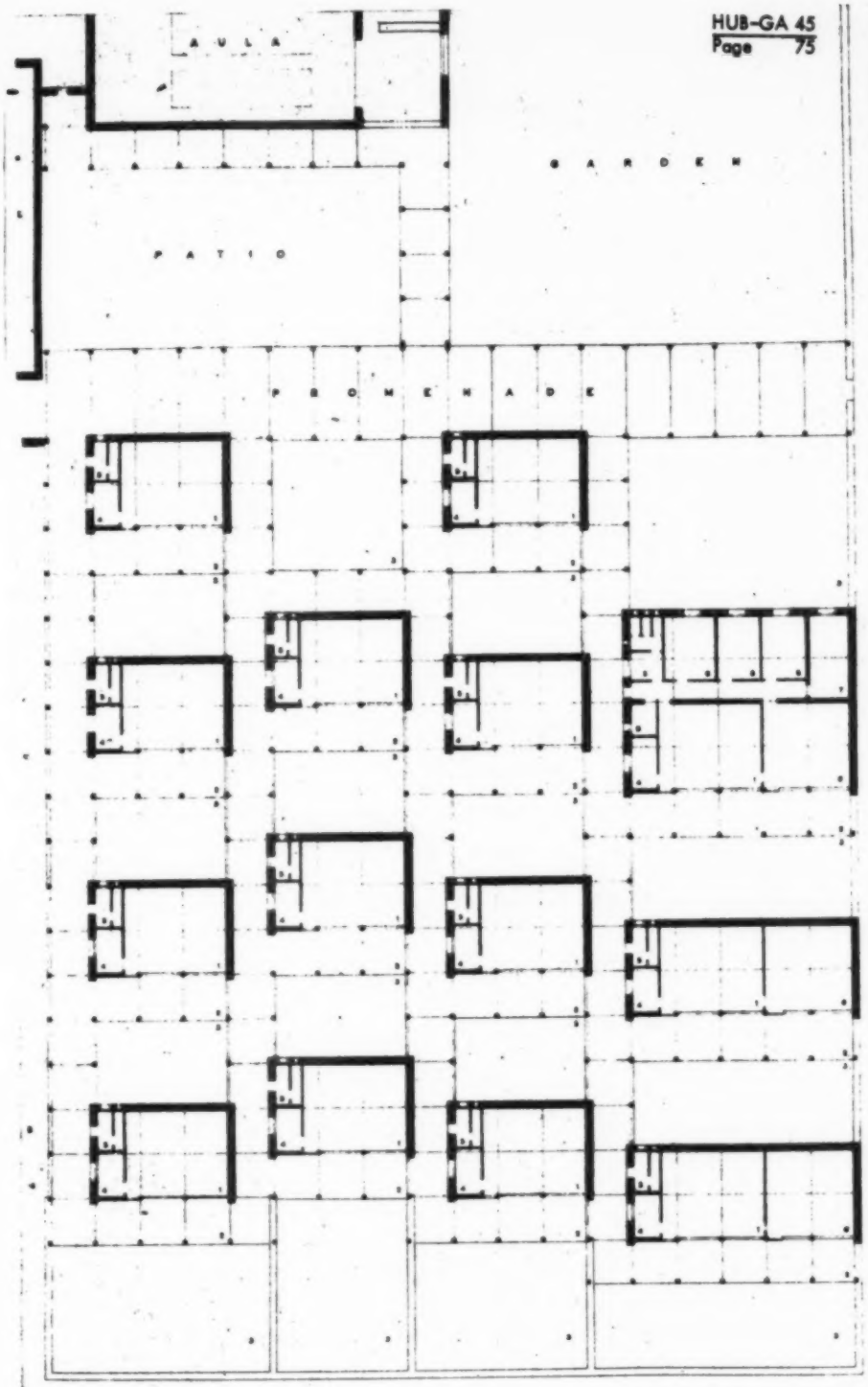
Page 74
PAKISTAN
CLASSROOM BLOCK
1. CLASSROOM
2. VERANDAH
3. OPEN AIR TEACHING
4. TEACHER'S OFFICE
5. TOILETS
6. LABORATORY
7. DARKROOM
8. WORK ROOMS
9. STORE ROOM
SCALE



1 CLASSROOM
2 VERANDAH
3 PATIO
4 TEACHER'S OFFICE
5 TOILETS
6 LABORATORY
7 DARKROOM
8 WORK ROOMS
9 STORE ROOM

SCALE

GOVERNMENT OF PAKISTAN

ACADEMIES FOR VILLAGE DEVELOPMENT
W P A

CLASSROOMS BLOCK

SCALE: 1/8" = 1'

PLAN

D - PVWA 20

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